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EDITORIAL.

THE "HIGHER CRITICISM" IN MEDICINE.

A critic of to-day, be his province art or literature or medicine, would think meanly of himself were the inspiration lacking him to interpret, with an unusual degree of originality, the subjects which his forebears treated in the most conventional manner. Originality such as this should not be discouraged, since it is only too apparent to all of us who have labored through the criticisms of a former day that their note was quite monotonous on account of an iteration that appeared to have no end. But when this is said the meed of praise that should be forthcoming, on behalf of what might be called the "higher criticism," has been meted out; and the accusation of a lack of appreciation cannot be advanced with any show of reason. Now, though our disapproval would be loud were a coldshouldering of the originality which informs this special criticism of the hour too evident, we must admit that when it runs riot a halt should be called, lest this admirable quality lose those graces which have hitherto placed it in the front rank of our most desirable mental assets. As regards this tendency to allow originality to go unbridled, a case in point, and one that is not without special appeal to all medical men, is the medico-literary criticism of the day, which is writ large in numbers of medical journals, and which is nothing else, in many instances, than the straining after effect of the medical mind in its desire to startle, with new and surprising judgments, the fixed and rather placid views that most readers have entertained in regard to certain men of genius and their works. That this is the order of the day cannot be denied by him who reads with intelligence; but even with the thought that the medical moderns should be respected on account of their innovating ideas, though

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these be antagonistic to our preconceptions, may we ask in all humility why this "higher criticism" invariably plays around the sexual question?

The latest sinner in this respect is a writer in *The Hospital* (London) of February 11th, who in an article entitled "Genius and Decadence" sets forth his reasons for classing Walt Whitman among the homosexualists. Instead of fortifying his position by discussing, in the Freudian manner, Whitman's letters to Peter Doyle, the street-car conductor—letters which John Addington Symonds in "Walt Whitman—A Study" says "breathe a purity and simplicity of affection, a naïveté and reasonableness, which are very remarkable considering the unmistakable intensity of the emotion"—he reads between the lines of certain poems, to-wit: "What I Heard at the Close of Day," "A Glimpse," and others, those revelations of the poet's character which his mental attitude demanded upon opening "Leaves of Grass." Immanuel Kant, whose "Critique of Practical Reason" is rated by Otto Weininger as the greatest book ever written by man, says: "A belief, that is ordered, is a chimera," and nothing could be more illuminating as to the bias of the medical critic, when he brings his mental processes into play in connection with certain findings in an author's prose or poetry and then builds up a character, than his insistent application of this lamentably wrong tenet. If he were not scenting for this sort of deviation from the normal, we doubt very much whether he would be so successful in locating his quarry; but even in case the close study of certain lines is made by one who has no prejudices, and the resultant is an awakening to the fact that a feeling tinged with emotion existed between the author and a member of his own sex, ought he to embrace the conclusion at once that light has entered where darkness was before, and that there was all along abnormal sexuality which was but slightly hidden under the thin veneer of a subtle literary style?

What would not be the outcome were this false reasoning to continue, and what would not be the avalanche of "higher criticism" that would descend on our unprotected heads? How many days will elapse before some wight of the same order, with raucous voice learnt in the Freudian school of polemics, will elucidate for us the inner meaning of Elizabeth Barrett Browning's two sonnets, "George Sand: A Desire" and "George Sand: A Recognition"? Then there is that splendid passage in Macaulay's essay on Bacon—a passage that is rich in possibilities—and which runs thus: "He [Bacon] erected, at a cost of £10,000, a retreat to which he repaired when he wished to avoid all visitors and devote himself wholly to study. On such occasions a few young men of

distinguished talents were sometimes the companions of his retirement." And to cite another case could anything be more persuasive, more alluring for the modern analytical critic, who has won his spurs in medical "higher criticism," than the incident in Lord Byron's career when he forsook his sensual life among the Italians to join the military forces who were fighting for Greek independence? Can this act be construed otherwise than as a sordid chapter in a rake's life: a chapter which shows, in the most unmistakable fashion, that when sensuality and genius are combined, the former soon deteriorates into the abnormal. Hence, are we not justified in saying that the impelling force, in Byron's case, was not patriotism, but an irresistible desire to practise homosexualism with the Greek soldiery?

We, who wander along the beaten path with but small thought of the morrow, should not think too lightly of what the future has in store for us by reason of the precepts which will continue to flow from the ever-ready pens of our medico-literary critics. Although we smiled superciliously when Sigmund Freud declared in his work, "Drei Abhandlungen zur Sexualtheorie," that "sucklings who are given to sucking their fingers show evidences of an early sexual development which invariably results in hysterical disturbances during childhood"; although we scoffed at the idea when this same close observer advanced the startling theory that "a suckling was the agent of exciting his mother sexually by means of touching the nipples, and that a mother's love for her child was measured according to the excitation"; although we were superficial enough to laugh quite hilariously when Ernest Jones, a simon-pure Freudian, told us that Hamlet was sexually in love with his own mother, our merriment should not continue; for it is in the air that if we are not wary these stern students of our simplest and most innocent acts will ere long be at our heels to remind us of the abyss that is confronting us by being seen too often with members of our own sex.

But will they stop here and go no further? Will they be content only to warn? Or will they vitiate completely the literary, artistic, and musical phases of our lives by pointing out such pitfalls for our morals, as some of the poems which we have cherished or the music-dramas of Richard Wagner; for was not this composer a homosexualist, and how can one possibly be a "perfect Wagnerite" without being affected by a form of music that must be subversive of our normal sexual status?

THE PUZZLE OF VARIATION.

The abnormal are destined to receive more scientific study than formerly, now that so many investigators are working on the problems of eugenics. Some observers are quite positive that the production of better human types is beyond our powers, and that the best we can do is to learn how to prevent the birth of the worst. As this is preëminently a medical problem, it certainly behooves all physicians to keep in touch with current literature on the etiology of the defective constitutions which fill their case-books. We spend our lives patching up degenerates, and are thus in a position to find out what caused the defects. We may not discover anything of practical therapeutic use. Indeed, we know that effective treatment of this sort should begin with the grandparents. We must learn what happened to the grandparents to have such a profound toxic influence on their germ-cells, that the progeny were defective for three or four or more generations. This effect is so potent that it operates in spite of environment, good or bad.

Pearson's epoch-making work shows that we have vastly overestimated the effect of the environment, and yet we are paradoxically always harping on the proved fact that an adverse environment is the sole cause of departures from normality—bad habits, bad food, liquor and all the rest. The explanation is found in the potency of the effect of adversity—it acts for many generations in spite of efforts to restore the line to normal ruts. Children in the slums are not so greatly injured by the slums as we once thought, but they are biological "chips of the old block," which drifted to the slums because injured elsewhere.

The startling conclusion from all this new data, is that the causes of degeneracy are to be found in normal respectable families who live improperly. Their children are so injured that they cannot struggle for existence, and they drift into the only places where living expenses are within their reach. The new adversities do not cause much more damage but do not restore, and their children therefore resemble these abnormal parents and not the normal grandparents. In other words, the improper ways of living found in respectable families are more powerful in producing degeneracy than the conditions of the slums in increasing it.

The statistics of Elverton and Pearson, to which we have previously referred, show the mental and physical superiority of the children of drunkards. There is only one conclusion to draw from these remarkable investigations,—drunkenness as a rule must attack the higher types of a community rather than the mediocre or even the lower. The children inherit the superiority in spite of an alleged alcoholic poisoning of the

spermatozoid and ovule. The ovum, safely tucked away in the uterus, is able to develop in spite of considerable alcohol in the tissues of the mother, though as a matter of fact alcoholic tissue-changes are generally not very marked in the reproductive period, but show themselves afterwards even if the habit does arise early. We can well understand this process, but what is so puzzling is why alcoholic tastes should develop in superior persons so frequently. Every physician knows that the degraded sot is quite commonly of splendid stock, and that the children born to him before his decay may not inherit the taste at all, but show superior abilities, in spite of the bad environment later created by their drunken parents. The puzzle of the cause will no doubt be solved by physicians who are now making this a life-study in the new institutions for the incurable inebriates.

Luckily the trend is now in the right direction. Lombroso started us wrong with his theories which have been such failures because so little was then known of heredity and the causes of variation. In spite of their newness and baselessness, they were largely accepted and gave rise to a veritable flood of medical articles more or less absurd. Then everyone began to think for himself and there was a reaction during which but little was said. The pendulum is now swinging back and we notice an increasing number of articles bearing upon the causes. The school teachers are even taking it up because of the increasing number of exceptional children needing special training. All this is most wholesome, and in view of the enormous advances being made in the study of the causes of variation in the lower animals and plants, we may expect something of value soon. To this end we certainly think that the practising physician should make an effort to find out the causes of the weaknesses he finds in every patient, even if he must acquaint himself with the family history two or three generations back. We have referred to this several times, and repeat it now in order to direct attention to a critical study of the articles now appearing, which give the results of real investigations in lieu of the bizarre speculations of fifteen years ago.

We will learn in time how to prevent bad variations, but what is of infinitely more importance, we may learn the manner in which regeneration takes place. History is full of such incidences, and biology shows that lower organisms are almost invariably restored to the normal by a proper environment after modification by an improper one. Moreover, the ancestress of the great Edwards family of New England was a very abnormal woman whom our present-day enthusiasts would condemn to sterility.

OPINION AND CRITICISM.

MEDICAL TERMINOLOGY.

A subject which should be of perennial interest to all medical men who have passed through the stress of acquiring medical terms with some show of success, only to realize some months after that they must unlearn what had been got with such extraordinary labor, is the all-absorbing matter of a medical terminology that shall bring surcease of unnecessary upsets to the already sorely-tried medical mind. When the medical mind in its youthful estate—that is when it was still unconscious of the fact that its after-years would be devoted to the acquisition of the science of medicine—was ploughing wearily through the dense forests of Latin and Greek terminology, it unwittingly thought its tasks should be viewed with some degree of toleration, since they could not last for ever; but that the reckoning was done without foresight cannot be denied by anyone who has coped in vain with the unsystematic terminology peculiar to medical studies.

The human brain, be it engrossed in medical or lay matters, is capable of a certain amount of work: a platitude which has often been stated by physicians who have closely studied the phenomena of this very patient organ. But though this kindly consideration for the brain's capacity is not withheld from our various conversations, and though all around us there are undoubted signs that there are tendencies towards educational simplification, the science of medicine is completely divorced from the movement. Of course, we realize that this special science must, to be a living factor, take unto itself new branches oftener than perhaps any other science; but would all these recently added studies be the burden to the physician's mind that they are, if the nomenclature aimed at something better than words which fairly scream on account of the overcrowding of letters?

Dr. Félix Regnault, writing in *Le Progrès Médical* of February 11th, makes a number of pertinent remarks on this subject; and though he is in favor of using French words, instead of bastard Latinized or Grecized expressions, he is modest enough not to attempt a solution of the intricate problem. But despite his failure to land us on those shores of inviting verbal simplicity which would mean balm to our tortured brains, he advances enough thoughts to arrest us, even though it be only for a moment, in our wild dash after new additions to our already plethoric medical vocabulary. Why, asks this clever essayist, should we burden

our memory with proper names when we wish to designate a disease? Why call caries of the vertebræ of tuberculous origin Pott's disease, exophthalmic goitre Graves's or Basedow's disease, symmetrical gangrene of the extremities Raynaud's disease, locomotor ataxia Duchenne's disease, paralysis agitans Parkinson's disease? Would it not be more to the point, not to say more illuminating, to use terms that would convey some idea of the diseases themselves? Again, why, when our medical nomenclature is already overflowing with Latinisms that are understandable—our limited knowledge of Latin acquired in schools and colleges stands us, in this respect, in good stead—have a goodly number of words derived from the Greek been latterly introduced, when to most of us, even in our enthusiastic and omniverous college days, this language was a bugbear that loomed ominously upon our horizons to sadden many days that otherwise would have been bearable? To cite only a few of these words, could anything be more forbidding, more repulsive to the ear attuned to euphony—and even the medical ear has some regard for this admirable quality—than trophoneurosis, rhizomelic spondylosis, acrodynia, acroparesthesia, and acromegaly?

We hold no brief for the English language as a medium for the correct expression in words of scientific thought; we know its deficiencies only too well; but remembering these deplorable lacunæ in an otherwise admirable language, we nevertheless feel that it is not so poverty-stricken that it could not yield a larger number of medical terms of purely English birth, if more pressure were put upon it. But the tendency in advanced medical circles is such to-day that it would be considered an unpardonable indignity to the science of medicine were it subjected to anything so commonplace as the designation of a disease in pure Anglo-Saxon. This is not the case in England, where even in medicine an English expression is often preferred to a bastard foreign one; but even there the invasion of the enemy is constant and uninterrupted. Nevertheless, enough British insularity obtains to place obstacles in the way of the intruder, and while the results are not encouraging they are not altogether discouraging. With us the conditions are different, what with our lack of insularity and the more or less Teutonization of medicine. But the wearied brain, that attempts to con its lessons in our latest medical dictionaries, cares naught for these reasons, or if it gives them a thought, the balm which is extracted is a very poor soothing salve against an irritation which must arise from the vast medley of words which bear but a faint resemblance to a manner of speech that is a daily habit.

LITERARY NOTE.

Théodore de Cauzons, who is already known to a large circle of readers, not only in France but elsewhere, on account of his profound

studies in connection with the origin of sorcery, the hunting down and punishment of witchcraft, the arrest and conviction of the Knights Templars, and the trial which led up to the burning of Joan of Arc at the stake, describes in the third volume of his work, "La Magie et la sorcellerie en France" (Paris: Dorbon, 1911), the history of sorcery in the sixteenth, seventeenth and eighteenth centuries. It surely must appear paradoxical to all readers that these three consecutive centuries should be witness to the greatest development of sorcery: centuries which taken in order are red-lettered in history for the protest against papal Rome which eventuated in what is historically known as the Reformation, for the deprivation of the Mother Church's great influence in temporal matters, and for the substitution of Reason and Philosophy for religious dogmas that were against reform. The Middle Ages, strange to say, though their credulity was childish and life for the greater part was dedicated to the worship of the Almighty, the saints, and the devil, were quite free from the innumerable sorcerers and magicians, who during the centuries which have been mentioned engaged the attention of ecclesiastical judges, parliaments and even kings. Justice ran riot to so great a degree that accusations were made on the slightest provocation and scenes were enacted at the various so-called trials that embodied everything that was grotesque and horrible. Thousands of human beings who had hallucinations were regarded as guilty of witchcraft and were imprisoned or burnt at the stake. M. de Cauzons describes in detail the strange occurrences which led to a belief in sorcery. In France, and especially in England and Germany, the onward march of this fiendish belief in the untoward workings of the supernatural proceeded without let or hindrance. The indictments against the Dominicans of Berne, the persecution of all sorcerers in Protestant countries, the prosecution of the Ursulines of Loudun, the burning of the unworthy but unfortunate Urbain Grandier, victim of Laubardemont, councilor of State and tool of Richelieu, who was also responsible for the deaths of Cinq-Mars and de Thou, are among the occurrences which darkened many pages of the history of this time. During the reign of Louis XIV. the Marquise de Brinvilliers exercised her unusual gifts as poisoner and was duly executed, La Voison, the pretender to prophetic knowledge was burnt, and the Black Masses were instituted: a period in French history when the inner life of the Court, and in fact of the whole city of Paris was thoroughly ventilated in the close quarters of the "Chambre ardente" and under he scrutiny of La Reynie, first lieutenant-general of police, and the gossipers of scandalous remarks anent the "Sun King" or his favorite of the moment, Mme. de Montespan, were speedily punished by their prompt removal to prisons or neatly executed, for were they not troublesome witnesses? But though quite innocent offenses were severely and even barbarously punished, the strong probability of the infernal machinations of the

demons invading the human frame was no longer a fixed belief, for already an awakening took place among the persecutors by which they realized that, by the extortion of money from unfortunates who were willing to pay heavy bribes, demonical obsessions could be exorcised. In the eighteenth century, it would be well to chronicle here, the presiding judges, in cases that were being tried for witchcraft, showed a greater degree of intelligence, for instead of consigning this class of criminals to indefinite stays in prison, or ordering them to be tortured on the rack or burnt alive, they displayed some show of humanitarianism in so far as it occurred to them that the insane asylum was the proper abode for the obsessed. The convulsionaries of Saint-Medard, for instance, when they indulged in their hysterical manifestations, under the thin guise of religion, around the tomb of the pious Jansenist, François de Pâris, in the eighteenth century, were treated quite humanely by the law when comparisons are made with what was the fate of the nuns of Port-Royal and the leading Jansenists during the stormy times of 1661. A royal edict closed the cemetery and only a small number of these misguided enthusiasts were sent to prison, where they were kept under surveillance until their restoration to sanity, or as happened only too often, their incarceration being prolonged, their already unbalanced minds broke down completely. It was at about this time that the belief in sorcery ceased altogether and the belief in magic arose, although rationalism was dominating European thought and the Encyclopedists were in full sway. With the arrival of the Viennese doctor, Friedrich Anton Mesmer, in Paris, with his theories about psychic and somatic phenomena as shown in magnetic and somnambulistic states, we recognize the beginnings of the neuropathy of to-day. Even the disinterested and those, whose investigating minds were, as one would suppose, above the fascinations of so flimsy a science as was mesmerism, were caught in its meshes, and the result was that men like Puységur and many others were so completely carried away by its teachings that they did not hesitate to say that at last all the problems of the universe would be solved, that all diseases would be cured, and that mind had so greatly triumphed over matter that at last there was no further need of the intervention of our special senses; otherwise mind-reading, reading with the eyes bandaged, levitation, etc., would not be possible. In the crowds which followed this charlatan were rogues and tricksters, but the one who was most seductive, who was *par excellence* the cheat of cheats, was surely the mountebank who hailed from Palermo, Joseph Balsamo, self-styled Cagliostro. In his youthful days when he was still Joseph Balsamo, he familiarized himself with the Hermetic art of the ancient sacred books of Egypt. The jumble of incongruous theosophical, alchemical and astrological ideas contained in the writings of Hermes Trismegistus appealed to him, for his acumen at once told him that this was exactly what he needed with which to astonish and bamboozle those—and their number was legion just as it is to-day!—

who are ever willing to be seduced by something that is both novel and incomprehensible. To the consummate art of the magnetizer, Cagliostro added ventriloquism, prestidigitation, and above all an unbounded audacity. Driven from pillar to post he nevertheless took a cheerful view of life, and his unquenchable jauntiness never forsook him, whether he took up his residence in Barcelona, Madrid, London, Paris, in Belgium or in Germany. Swindler, pander, and even murderer—the accusation had been brought against him of having murdered his master in the art of magic, Althotas—his purse never told the tale that fortune was against him. In England he joined a Masonic lodge. Immediately afterwards he started an Egyptian lodge. He saw at once how helpful this sort of membership would be to him in the matter of increasing his prestige, and as a means to an end; that is, he hoped with the secrets that he would acquire through his intimate association with other members to strengthen his powers of divination. He called himself the Great Copt, supreme chief of Coptic freemasonry, the repository of the ancient secrets of Egyptian lore revealed to him some three thousand years before, thus establishing, beyond the shadow of a doubt, his great age. He was about to create a supreme council of thirteen members, which would no doubt have been composed of dupes and cronies, when the affair of the diamond necklace was unearthed, and the imprudence of Marie Antoinette, the stupidity of Cardinal de Rohan, the knavery of La Motte and Madame de La Motte were made the subject of a great scandal. Cagliostro was banished, but though disgraced his departure was not unattended by scenes which must have been balm to his wounded feelings; for when he embarked for England at Boulogne, 5,000 people knelt before him and begged for his benediction! Regarded as a spy and secret agent he soon was compelled to leave his newly found asylum, whereupon he went to Rome where he was arrested and arraigned before the Holy Inquisition and condemned to imprisonment for life. The career of this arch-imposter, as well as the lives of others who were only suspects, teaches us a very good lesson—namely, that when such humane means of punishment exist as the Inquisition, the rack, and the stake, culpability is always severely chastised, and that it is quite unfortunate to be born some two hundred years too soon, for in our modern times a decided distinction would be made between those afflicted with hallucinations and those whose criminality merits the severity of the law.

ORIGINAL ARTICLES.

THE BEARING OF OLD AND NEW FACTS UPON OUR CONCEPTIONS OF CARDIO-VASCULAR DISEASE.*

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There are several reasons why I have chosen this subject: First, because it is one which is of vital interest to medical men. Cardio-vascular disease is not only a common condition among patients, but also the commonest malady to which medical men fall victims. Again, cardio-vascular diseases are being investigated to-day far better than ever before, and it behooves us to compare our old knowledge with the new facts. Lastly, cardio-vascular lesions result in conditions which govern the conduct not only of the physician and the surgeon, but the specialist who devotes his skill to such limited parts as the eye, the ear, and the naso-pharynx.

Many of us, when students, have regarded the elementary or fundamental departments of medical science as stepping-stones which had to be passed over in order that the coveted ability to practise medicine might be obtained, but we look back to-day and wish that we had recognized that a full knowledge of these departments would be of infinite use in after-years. For example, how prone we have been for years to think of the heart as an organ, whose sole connection with the vessels was one of contiguity or continuity, and to ignore the fact that at a very early period in embryonal existence the heart is only a blood-vessel, and that its final structure is simply a special overgrowth of the muscular fibres which, on the one hand, form a heart and, on the other, a coat of the arteries. A recollection of this simple matter in embryology impresses the fact upon us that a host of causes which affect the vessels must affect the heart, not only indirectly but directly, and emphasizes the need of considering the whole circulatory apparatus as a unit, except in a few instances in which the high specialization of the heart-muscles renders it peculiarly susceptible to certain poisons or infections. Such a conception of the cardio-vascular apparatus gives us, both in acute and chronic disease,

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a much clearer view than the old one in which the heart received all our attention and the vessels were largely ignored. So, too, in physiology, how many of us in years past have failed to recognize the importance of subsidiary vasomotor centres, dilator and constrictor, in our studies of circulatory disorders, functional and organic; and in pathology and morbid anatomy, how prone we have been to consider the vessels in the celiac axis, the basilar or coronary systems, as normal because those of the forearm showed no sign of atheromatous change! To-day, we must recognize that disease affecting one part of the circulatory apparatus is likely to affect all of it, and yet, on the other hand, remember that marked lesions may develop in one part and leave other parts intact.

Even those, who in the past gave the vessels more attention than many of their colleagues, nevertheless placed the heart first and the vessels last in importance, but I feel now that the reverse should be our attitude and that careful study of the vessels will give us as much information as we may get by direct examination of the heart. How many cases of so-called cardiac disease depend in reality upon cardiac fatigue due to vascular disease? How many cases of supposed dyspepsia and of abdominal pain have their origin in disease of the abdominal vessels, and how many cerebral symptoms and renal symptoms rest upon a similar basis? My experience is that many cases have such an origin. To-day, we appreciate that the state of the vessels may completely control our diagnosis and treatment in acute illness. If, for example, a young man with bad vessels and an old man with good vessels are attacked by croupous pneumonia the prognosis is, other things being equal, bad in the young man and good in the old one. The presence of degenerated vessels makes us recognize that the pneumonia is in the nature of a terminal infection, a method designed by nature to remove one of the unfit, and from the immediate point of view indicates that his heart is probably also affected and in addition tired by its effort to pump blood through narrowed paths.

In this connection I wish to call attention to a method of diagnosis, prognosis and treatment, that has not received the attention it deserves.

In the *Therapeutic Gazette* for last June, I made a report as to the value of studying blood-pressure in pneumonia for the purpose of determining the state of the heart-muscle and the need for stimulation or cardiac support. G. A. Gibson, of Edinburgh, first called attention to the relationship of blood-pressure to heart-force in acute pneumonia in the *Edinburgh Medical Journal* for January, 1908, in the course of an article, entitled "Some Lessons from the Study of Arterial Pressure." This important observation of Gibson's is buried in a paragraph dealing with another matter, and this accounts in all probability for the fact that comparative little attention has been paid to it. To use Gibson's words, "a pressure appreciably below normal in pneumonia is invariably of evil omen, and any considerable fall bodes disaster. When the arterial pres-

sure, expressed in millimeters of mercury, does not fall below the pulse-rate expressed in beats per minute, the fact may be taken as an excellent augury; while the converse is equally true. From the work of the last few years in my own wards no fact is more certain that this." To this matter attention was called in a valuable article which was published in the *Edinburgh Medical Journal* for January, 1910, by G. A. Gordon. Gordon's results are entirely in accord with those of Gibson. In 15 cases of pneumonia, which he studied, there was not a fatal result when the blood-pressure, expressed in millimeters of mercury, was maintained above the pulse-rate per minute, and in only one case did it happen that recovery occurred after the blood-pressure was persistently below the pulse-rate. This patient got well by the immediate administration of strychnine, quinine, and strophanthus, which, to some extent, restored the normal ratio. Gordon adds: "It may be one's good fortune sometimes to save a case in which the blood-pressure is persistently below the pulse-rate, but these cases will be few."

During the past year I have had in my wards in the Jefferson Medical College Hospital a considerable number of cases of croupous pneumonia occurring in patients widely separated in years of age and in physical condition; widely separated also as to the size of the pulmonary lesions, as to the degree of toxemia, and as to the previous history and the state of such important organs as the heart and kidneys. The results which I have obtained fully corroborate the observations made by Gibson, and later by Gordon. In all cases in which the blood-pressure fell to the pulse-rate or below it, active stimulation was instituted. In those cases in which the blood-pressure bore a normal ratio to the pulse-rate, and the heart signs were satisfactory, no treatment by drugs was resorted to.

In the past we have been accustomed to control therapeutic measures by the study of the first sound of the heart, the pulmonary second sound, and the aortic sound; by the results obtained by palpation of the radials, by the degree of dyspnea and amount of cyanosis and venous turgescence. It is not necessary to state that these observations should be continued, for they are most important. But the point which I wish to emphasize is that by the use of the sphygmomanometer we can keep track of the patient from day to day, record his circulatory state, and when an intelligent trained nurse or resident physician is at hand, observations can be made so frequently, in the absence of the attending physician, that any tendency to circulatory failure can be discovered and equally promptly combated.

If the pressure remains approximately normal and the speed of the heart increases, this would seem to be indicative of disordered cardiac action caused by the direct effect of the disease upon that organ, and the heart should be treated as the chief factor of importance. But if, on the other hand, the pressure falls considerably and the pulse-rate rises simultaneously, then we have reason to believe that the vascular system is

in need of stimulation, since the heart is endeavoring to fill relaxed vessels by increased activity. This view is strengthened if, on auscultating the heart, we find its first sound fairly strong. Under these conditions vascular tone rather than cardiac tone is desired. If the sphygmomanometer shows the pulse to be slow and the pressure high, the nitrites are properly needed; but if, on the other hand, the pressure is low and the heart is beating rapidly in its endeavor to fill relaxed vessels, the nitrites are very deleterious, as by their use we greatly increase the very state which the tired heart is endeavoring to remedy by extra effort. Yet I venture to say that there is no more common error in therapeutics to-day than the use of the nitrites in circulatory failure of pneumonia. They ought never to be used if the pressure is below normal, but only if it is so high that we fear the heart will become exhausted in trying to drive the blood through the narrowed blood-paths. Even if the blood-pressure is above normal, this does not necessarily indicate the nitrites, because it is to be borne in mind that in the early stages of pneumonia a pressure above normal, if not excessive, may be a normal manifestation of the malady due to the stimulus of fever, and perhaps with the object of so increasing the rapidity of the circulation that phagocytosis and other protective processes may be aided. We are all so fearful of circulatory failure in this disease that the temptation is constantly to stimulate from the first, and to fail to recognize that many variations from the normal are the result of the adaptation of the body to the new conditions engendered by the disease. We must give nature, at least in the early stages, the credit of knowing what is the best thing to do to save the patient and give nature a chance. A ship which lies on an even keel in a driving gale is water-logged and lost. So in disease, many circulatory conditions may arise, which in a healthy man would be indicative of grave disorder, but in a man stricken by pneumonia may be natural. The man who "water-logs" his craft to keep her from going up and down in the storm courts disaster, yet how often do we, by the use of remedies, try to keep the patient on an even keel instead of allowing him to rise and fall with the waves of his storm. The study of the blood-pressure, or the vascular state, in pneumonia, gives us facts that enable us to avoid water-logging our craft, or over-drugging the patient; and it also tells us when the seas are running so high that the craft may be swamped, if we do not pour oil on the water and so enable the ship to ride out the storm. By this means we medicate only when necessary and we do not give medicines because the patient has pneumonia. I fail to see why a physician should order stimulants or sedatives for a case of pneumonia for the next twenty-four hours. What captain, whose ship was in a terrible storm, would write out orders for the next twenty-four hours and go below to sleep?

If at one time the pressure is high enough to cause the heart undue labor it may be reduced by one or more doses of one of the nitrites, and if the pressure falls it may be raised by one or more doses of a vascular

stimulant of which I believe belladonna and atropine to be of the best, not because it greatly stimulates the vasomotor centre, but because it equalizes the distribution of the blood. At one time atropine was thought to act as a universal vasoconstrictor, and the fact that the vessels of the skin were widely dilated by its use was ignored. The good that followed its use was supposed to be due to the rise of pressure it caused; but I question if this is entirely true, for a rise of pressure means more work for the heart. I think that the chief value of atropine in failing circulation is that it prevents bleeding into the great abdominal vessels, dilates those of the periphery, and so equalizes the circulation or restores circulatory equilibrium. Circulation alone, without balance or equilibrium, is never seen in health. Even the rigid pipes of this building, which heat it, would not functionate properly if the equilibrium of their circulation was so disturbed that in some the flow was so sluggish that no water was distributed to certain rooms. The restoration of circulatory equilibrium or normal distribution, is the explanation of the value of alcohol and the cold bath in enteric fever. Furthermore, the restoration of circulatory equilibrium not only permits proper oxygenation and nutrition, but it greatly decreases the work of the heart, which, if ischemia exists in one part and congestion in another, finds its peripheral resistance at such variance that it cannot act properly, vainly endeavoring to fill empty vessels at one point and to empty engorged ones elsewhere.

This brings me to another topic—namely, our attitude as to high pressure in those not acutely ill, and its state when such persons are stricken with an acute malady. An immense amount of statistical evidence establishes the belief that a systolic blood-pressure of about 140 is the normal for an adult male; and although this knowledge is of value it is nevertheless capable of leading us astray, if we get the impression that it is normal for *everyone* who has reached adult life. There are few functions of the body so readily varied by slight causes as the maintenance of blood-pressure. Those with experience know that in nervous persons the pressure may be elevated 10 to 20 mm. of Hg. by the knowledge that the pressure is being taken. A pressure taken in the consulting-room may be so different from the patient's ordinary pressure as to be useless as a gauge of his average circulatory state.

If he has any tendency to arterial spasm, and his heart is strong, the pressure may be very high, whereas if his heart is tired and weak the exertion of visiting the physician may cause an abnormally low pressure.

As I have repeatedly pointed out before, the development of spasm or fibroid changes in the vessel-walls, if the heart is capable of expending more power, results in a high blood-pressure which is essential to the life of the body. Inelastic vessels, more or less rigid, interfere with the passage of blood to such an extent that a higher pressure must be kept up to drive the blood through them. If we attempt to lower the abnormal norm that nature has established, to the theoretical norm we

produce a state in which the necessary distribution of blood is impossible. This represents a case in which an abnormal norm of 170 has been established and fever has raised the pressure to 190 or 200. The abnormally slow pulse of 60 and the character of the heart-sounds show that that organ is laboring. We should not try to bring the pressure down to the theoretical or statistical normal of 140 but to about 170, and thereby relieve the heart of the extra burden between 170 and 200. The pulse-rate is now dangerously fast; we must endeavor to raise the pressure to approximate the pressure which is actually normal for that man and slow the action of the heart.

Recently one of my assistants at the Jefferson Medical College Hospital, Dr. Lull, has been carrying out these studies in connection with anesthetics. In one case, with the onset of the operation, the pre-operative blood-pressure of about 200 fell in a few minutes some 60 points. Surely this was not an indication for the use of nitrites, although the almost routine, but erroneous, use of these drugs in circulatory failure would probably cause their administration by many otherwise well-trained men. Indeed, the excellent character of the heart-sounds, and the fact that the pulse-rate was not greatly raised, lead me to believe that the anesthetic may, by its sedative effect, have relaxed spasm of the vessels and relieved the heart of extra labor. Here is another illustration of the value of comparing blood-pressure and pulse-rate. If as pressure fell rapidly the pulse-rate greatly quickened, the increase speed would show that the heart was endeavoring by extra labor to maintain a higher and essential pressure. On the other hand, if as the pressure fell the pulse-rate quickened but little, then the indication would be that the lower pressure was adequate for the needs of the body, and that it and the pulse-rate represented a nearly normal state of the patient.

Patients should have had their pressure determined some days or hours before operation so as to get a true conception of its state and to leave time to adjust it if need be. If the pressure is found abnormally high it should be treated by rest in bed to lower it and to rest the heart, so that patients are not sent to the operating-room with a vascular system and heart under such strain that another ounce of energy cannot be produced to meet an extra call. In such instances, and in chronic cases characterized by high pressure and not complicated by acute illness or operative measures, before we institute drug treatment we must determine the new normal pressure at rest and during exercise. We must determine the power of the heart-muscle, and if possible form an idea of how much reserve energy it possesses with which to meet a sudden call, and finally by relaxing the vessels by means of rest, bathing, massage, and perhaps drugs, relieve excessive strain. We also hope to increase cardiac power by these same agencies. In other words, in all cases of circulatory disorder we should tune the circulatory system as a musician tunes his guitar by tightening one string and slackening another, and we should

not attempt to better things by tightening everything up or slacking everything off; in each case lack of harmony would develop. We should not always stimulate the heart when we stimulate the vessels, nor depress the heart when we relax the vessels. Sometimes we should stimulate the heart and relax the vessels.

I have seen many cases of vascular spasm characterized by very high tension and in a state of low tension in which the radials and other vessels felt more like veins with pulse-waves than like arteries. In other words, the vessels have undergone the dilatation from fatigue and degeneration that so often occurs in the strained and tired heart. In these cases the heart is often found hypertrophied and dilated, and beating powerfully because it has been developed to maintain a high pressure in the face of vascular narrowing, yet cannot do this in the presence of the now dilated blood-paths. For such cases I know no efficient treatment save rest in bed and massage.

In this connection the original observations of Korothow and others, as to auscultation of the brachial artery below the cuff of the sphygmomanometer, are of interest. As the cuff is relaxed and as the pulse first appears at the wrist, it will be recalled that a sharp tapping sound is heard, followed by murmurs as the pressure is still more relaxed. These disappear and are replaced by tapping sounds fainter than those which are heard at first; finally silence ensues, due to the disappearance of all sounds representing the diastolic pressure and the first-named tapping sounds representing maximal systolic pressure. The auscultatory method makes the study of blood-pressure more accurate and of some diagnostic importance. Thus, in aortic regurgitation, the first or maximal systolic tapping sound is very sharply accentuated and silence does not occur on the appearance of diastolic pressure—that is, when the relaxation of the cuff is permitting a free flow of blood. One of the best studies of this topic has recently been published by Goodman and Howell, of Philadelphia.

Leaving the subject of the blood-vessels, let me turn for a moment to some of the newer facts in cardiac physiology and pathology and discuss their bearing on treatment. It is hardly necessary to remind the medical man of to-day that the impulse which results in cardiac contraction arises at the sino-auricular node at the mouth of the great veins, and thence passes down over the auricular and ventricular walls; nor is it necessary to recall the fact that disease or injury of His's bundle at the auricular margin results in partial or complete heart-block. In partial block only every second or third auricular contraction is able to reach the ventricles and excite these to contraction. The dissociation between the heart chambers is partial. In complete heart-block there is no relation between the auricular and the ventricular contractions; each part of the heart beats independently of the other, consequently the dissociation is complete.

It is not only important to bear these facts in mind, but also to remember that the bulk of evidence seems to indicate that the influence of the vagus is exerted directly upon the auricular movements and only indirectly upon those of the ventricles. In other words, the vagi, when stimulated, slow the beating of the auricles, and as a result the number of contraction waves passing per minute, by way of the bundle of His to the ventricles, is diminished. Again, it must be borne in mind that the ventricles, although controlled by the auricles through the bundle of His, when this bundle is intact, are nevertheless capable of perfectly normal contractions if they are entirely cut off from their ordinary source of impulse. Damage to the auriculoventricular bundle is serious, not because it stops the ventricles, but because it causes incoördination between parts of the heart which are interdependent, if the normal function of this organ is to be maintained.

Turning now to the greatest of all cardiac drugs, digitalis, we may recall two important facts. The first is that it powerfully stimulates the vagi and so primarily slows the auricles and indirectly the ventricles. The second fact is that it stimulates the auricular walls themselves very little, if at all, but powerfully stimulates the ventricular walls so that they beat more forcibly, and, further, if these ventricular walls are cut off from the vagus influence by injury to the bundle of His they also contract more frequently under digitalis than before the drug is given. In a case of partial heart-block in which the ventricular contractions are only one-third as frequent as the auricular movements, because the contraction-wave only occasionally gets to the ventricles, this will result in diminishing the number of impulses to contraction that can attempt to cross the bridge made up of His's bundle, and as a consequence a dangerous slowing of ventricular action may ensue. In other words, the use of digitalis in a case of partial heart-block may precipitate a fatal attack of the Stokes-Adams syndrome. On the other hand, it is conceivable that in the presence of complete destruction of His's bundle, or complete heart-block the use of digitalis may be advantageous, because as the ventricles are no longer in the slightest degree under the control of the auricles they are increased in power and in frequency of contraction by digitalis, and thereby are able to supply the body with a greater volume of blood. Von Tabora has proved that this takes place, for he found that if His's bundle is destroyed and digitalis is given the auricles beat more slowly, but the ventricles beat faster, and thereby an approximately normal ratio between auricular and ventricular beats ensues. In other words, if the auricles in a given case are beating 150 times a minute, and the ventricles only 50 times a minute, the auricular beats may be decreased by the vagus effect of the drug to approximately 75, and through the ventricular influence of digitalis the ventricular beats may be raised to 75, and so normal equality in the number of beats would be produced. An absolute equality in rate or in time may not be positive of achievement,

but the two rates can at least be approximated. Thus, in one of Bachmann's cases 3.72 to 1 became 1.45 to 1.

Given a case of mitral stenosis in which the obstruction is not so great as to interfere seriously with the passage of blood through the mitral orifice, then cardiac rhythm is well maintained; but, if the obstruction is great, arrhythmia develops, usually in direct ratio to the failure of the auricle.

In other words, the distention and exhaustion of the auricular wall impair its ability to conduct the impulse, arising in the sino-auricular node, to the ventricle. This view is held by Mackenzie. It not infrequently happens, as Mackenzie says, that the attack of rheumatism which has damaged the valves, and so caused stenosis, also is responsible for damage to the nearby auriculoventricular bundle, or it impairs the blood-supply of the bundle by damaging the artery which supplies it. This may, on the one hand, decrease its activity, or may render it more irritable. If it is decreased in activity partial heart-block ensues. If it is rendered more irritable when the contraction-wave starts, not in the sinoauricular node but in the auriculoventricular node, in accordance with the law that the contraction-wave starts at the most excitable part of the primitive cardiac tissues. This gives rise to the so-called "nodal rhythm," in which the ventricle starts to contract a fraction of a second before the auricle—that is to say, the normal sequence is reversed and the function of the heart seriously impaired. As digitalis stimulates part of the heart we may develop by its use in a case of nodal rhythm excessive ventricular systole, and so increase the difficulty.

As long ago as 1872, that most acute clinical observer, the late Dr. Mahomed, of London, called attention to the fact that in mitral stenosis there is a delay in the occurrence of ventricular systole after auricular systole, and, as is pointed out by Thomas Lewis in the *Quarterly Journal of Medicine* for July, 1909, Galabin in 1875 published cardiograms actually showing this delay. These observations have been confirmed in recent years by Mackenzie, Herringhan, and Hay, and indicate that partial or complete heart-block may develop in mitral stenosis. It is readily understood that certain physical signs may render it imperative that we should be most cautious in our use of digitalis in mitral stenosis. Thus, the disappearance of the presystolic mitral murmur in severe mitral stenosis is undoubtedly due to the inability of the auricle to drive the blood past the obstruction, or, in other words, to a greater or less degree of paralysis of the auricular wall. One of the reasons for believing this to be the case is that with the disappearance of the murmur a jugular pulse develops which is synchronous with the contraction of the ventricle. Some consider that this jugular systolic pulse is the direct result of the contraction of the right ventricle, but Mackenzie and others think it results from a simultaneous contraction of the right auricle and right ventricle. Whatever may be the cause of this jugular pulse, which is

systolic in time, the cardiac function is upset and a state not unlike that which obtains in the Stokes-Adams syndrome obtains, viz., delay in the passage of the contraction-impulse from the sinoauricular node over His's bundle, or, in other words, a state closely allied or equivalent to partial heart-block with jugular pulsation. In other cases a state is produced like that of nodal rhythm.

The therapeutic lesion would therefore seem to be that digitalis in mitral stenosis, with incoördination between the auricle and ventricle, may be a very dangerous drug, since by its power of diminishing auricular contraction through vagal stimulation, and its inability to increase the power of the auricular wall, it may increase the danger of auricular distention by retained blood and so paralyze this part of the heart. In other words, it may actually decrease the power of the auricle to empty itself into the ventricle. As Mackenzie well says, if there be depression of one function of the heart, vagus stimulation is liable to seize upon that function and increase the depression, presumably through its vagus influence. Furthermore, this tendency to distention of the left auricle is aggravated by the fact that the digitalis stimulates the right ventricle to drive more blood into the left auricle, thereby still further distending that cavity. Lewis states that digitalis has been proved, by observations made with instruments of precision, to increase partial heart-block, and Mackenzie on p. 186 of his well-known book (2nd ed.) states that the fact that vagal stimulation may be an important factor in the production of heart-block is not to be forgotten. This view is held by Mackenzie and has been proved by a number of investigators, particularly Roy and Adami. In conditions in which the cardiac conductivity is decreased there seems to be little doubt that digitalis still further impairs it. Mackenzie goes so far as to state that he always makes it a rule to stop the use of digitalis in a case of stenosis as soon as he finds the pulse is dropping a beat.

From the facts already stated the following deductions would seem to be correct and important:—

Given a patient suffering from circulatory failure due to mitral stenosis, it is our duty not only carefully to weigh the import of the tumultuous cardiac sounds, but by the use of instruments of precision to determine, if possible, whether there is delay in the transmission of the contraction-impulse over His's bundle. If such a delay exists in doses large enough to cause distinct and sharp cardiac effect, it is probably capable of prolonging this delay and so doing harm. If in addition to this delay there is a jugular pulse synchronous with ventricular systole, digitalis is still more contra-indicated, as it will impair the action of the left auricle, and will still further distend it by stimulating the right ventricle. If given at all, the dose of digitalis must be so small as to produce a very gradual effect, one which will not consist in decreasing auricular contraction through vagal stimulation, but gently reëstablish general cardiac

power. In other words, here is another instance in which the question of a proper dose is as important as the choice of the proper drug. The question naturally arises, If not digitalis, what else? The answer would seem to be that in such a case as that just described we should give the patient absolute rest, unload the portal system by free purgation, use venesection, it may be, to relieve stasis, and give rapidly-acting diffusible stimulants for a few hours until the coördination of cardiac movement is reëstablished. When this is done then small doses of digitalis, arsenic, and iron may be used to restore cardiac tone.

In concluding this paper let me hope that I have not wearied the readers with facts already familiar. If they have been too familiar to have been interesting, they will at least have served the purpose of impressing upon all physicians, particularly upon the younger ones, the need of constant study of the complex problems of physiology and pathology, and their bearing on successful treatment. Last of all they may serve to refresh the weary practitioner in that they show that the practice of medicine is not a laborious grind, but a means by which we can earn a living and still wander as true scientific students in ever new and developing paths of original investigation.

AUTOSEROTHERAPY: THE THERAPEUTIC USE OF THE PATIENT'S OWN SEROUS EXUDATES AND TRANSUDATES.

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The widely varying experiences of other men and the contradictory results I have obtained have led me to think it worth while, in accordance with the promise in my previous paper,[17] to review and tabulate all available cases from the literature. I desire also to add further cases of my own.

The whole procedure of autoserotherapy, in the treatment of collection of fluids in serous cavities, is an extremely simple one. It consists in the reinjection, hypodermically, of small quantities (1 to 10 c.c.) of the serous exudates or transudates withdrawn from the pleura or peritoneum. The aspirating needle instead of being withdrawn completely as usual after an exploration is withdrawn only as far as the subdermal tissues, and the fluid previously aspirated is injected under the skin without a second puncture. The almost unanimous verdict, of all those who have employed it, is that the method is entirely without danger and usually without systemic reaction. Introduced by Gilbert[12] in 1894 it has received attention from a number of French, Italian, German and Russian clinicians. As far as I have been able to find my report was the first in an American journal.

Gilbert, according to Tschigaeff,[29] received the stimulus to the use of his method from an observation of Debove and Remonde who used intra-abdominal injections of sterilized boric acid in tuberculous peritonitis and then used 5 c.c. of the peritoneal exudate causing a rise to 39° C. They considered tuberculin to be present in the peritoneal fluid. Gilbert considering the tuberculin in the exudates to be very dilute determined to use the exudates without dilution in the treatment of tuberculous pleurisy. He reported 17 cases of this kind in which the exudate was reabsorbed in six to ten days after a single injection in most cases. In only 13 cases was a repeated injection necessary.

In 1896 Scarpa[24] is said to have tried the method in 9 cases with favorable results. This article was not available to me for review.

In 1898 and 1899 Mongour[20] reported to the Medical and Surgical Society of Bordeaux 2 cases of tuberculous pleurisy. The first one was of hemorrhagic type of long standing, and was cured in nine days after

three injections of 2, 3 and 4 c.c., respectively. The second case, one of simple serous tuberculous pleurisy, also of long standing, was treated by reinjections of 10 to 15 c.c. every four or five days. The general condition improved enormously but the injections were without influence upon the local condition.

Tschigaeff,[29] in 1900 and 1903, reported 8 cases, of which 3 were probably tuberculous, in which he claimed to have had uniformly favorable results. The temperature was raised in all cases by the injections and after chills occurred. In some cases there was dyspnea. Resorption began sometimes immediately after the injection, sometimes only after one or two days. Diuresis was always increased. The time necessary for a cure was dependent on the period of the disease in which the treatment was begun. If it was begun in the first weeks of exudation the cure took ten to twelve days. If begun three or four weeks after the beginning of the illness the cure took two or three weeks. In some cases the withdrawal of 5 c.c. and the reinjection of 1 c.c. caused the diuresis to increase from 750 c.c. to 1100 c.c. or from 900 c.c. to 1900. The general improvement was great. Vieryuzhski,[30] who was consultant in the Nicholas Military Hospital where Tschigaeff conducted his experiments, did not hold the same roseate opinions of the latter's results. He considered the method not without danger. In three cases the temperature rose and remained high for weeks. He believed the autoserotherapy, being a modified tuberculin treatment, should previously be tried out on animals.

Donzello,[5] in 1904, treated 5 patients by the withdrawal of 5 c.c. of the pleural effusion and the immediate reinjection of 3 c.c. under the skin of the arm. All the patients recovered, but in one it was necessary to do a thoracentesis owing to serious complications on the part of the lungs.

In 1904 Stasevich,[26] influenced by the work of Tschigaeff, tried the method in 20 cases of undoubted tuberculous pleurisies. He found that the level of the effusion was not reduced to such an extent nor so rapidly as to warrant the assumption that the injection had a quickening effect upon the absorption. The general condition of the patient remained the same. The temperature always rose after injection, but no injurious local nor other phenomena were observed. The urine had increased in amount, but not to the extent claimed by Tschigaeff; usually from 700 c.c. to 800 c.c. or from 1800 to 2000 c.c.

Geronzi[10] reported in 1905, 8 cases of pleural effusions, all probably tuberculous, treated with autoserotherapy. All showed prompt and marked improvement. Two of the patients had also abdominal accumulations; in one of these the ascites was favorably influenced, in the other the influence of the injections was not so great on the ascites as upon the pleural fluid.

The series of cases reported by Jovane[16] in 1905, is extremely interesting. All the patients were children. The youngest, four months old,

who had a serofibrinous pleurisy (non-tuberculous?), died twenty-eight days after puncture. Four other children, three to five years old, with exudative pleurisies (one certainly tuberculous) showed prompt improvement. In the first case recovery occurred in twelve days. The second case was that of the four months' old baby noted above. In the third case complete resolution of the pleuritic process occurred, but death occurred later due to bronchopneumonia. Complete resolution took place in the fourth case, but the condition of the patient was unfavorable on account of an abdominal tuberculosis. In the fifth case the absorption of the pleuritic effusion occurred in a short time. Jovane also tried the method in cases of ascites. In one case of uncomplicated ascites (tuberculous?) in a child of five years, the rapid absorption of the fluid was complete in thirteen days after the injection. His other 3 cases had ascites in conjunction with pleuritic accumulations. Of these, 2 recovered rapidly, the third died ten days after the injection. Jovane concludes that autoserotherapy is a therapeutic measure which deserves a trial in cases of exudates, not only pleural and peritoneal, but of any other variety. He thought that it was necessary to establish its value in tuberculous and non-tuberculous cases, and that the method was more applicable to acute than to chronic cases, as in the latter the cachexia is usually profound and the patient fails to react. Sometimes he observed an increase of temperature on the days following injection. He noted a constant increase in the urine.

Fifteen more cases were contributed to Jona[15] in 1907. In these the fluid was absorbed in six to twenty-four days. In all, save two, the injections were followed by increase in urinary excretion, excitation of which function Jona considered to be the method of their action. Nine were cases of tuberculous pleurisies, one a traumatic.

Carletti[3] tried a modification of the method in twelve cases of pleurisy. He aspirated the fluid, set it aside at blood temperature to allow autolysis to proceed and then reinjected it later. He thought his results with this technique were better than the Gilbert technique, but did not consider them very favorable even with this.

Fede[8] treated 5 patients by withdrawing 1 c.c. of the pleural effusion and reinjecting this at some other point. This was repeated three times on three successive days in acute cases and the results were excellent. In more chronic cases up to 4 c.c. or more were used. No reaction, local or general, occurred, except in one case of tuberculosis, and in this the prostration and rise in temperature subsided during the night. The reaction in the tuberculous cases and its absence in the other cases, Fede suggests, might be used as a point in differential diagnosis.

Fontana,[9] in 1908, reported 9 cases treated according to Gilbert's method, modified in that in some cases the fluid had first to be entirely evacuated and reinjections were then practised. In 3 cases the pleuritic fluid disappeared promptly and rapidly after a single injection

without evacuation. In 5 other cases the fluids were removed as above stated and the reinjection performed. Recovery was prompt in all. In the ninth case a previous evacuation without autoserotherapy had been followed by a speedy reaccumulation, whereas treatment with autoserotherapy brought about a prompt diminution of the pleural exudate and recovery. Fontana considered the method of true therapeutic value in pleurisies whether tuberculous or not, but believed that it had a greater curative power when associated with thoracentesis. When intervention was done early, independent of the cause and nature of the disease, he believed the cure was obtained very quickly. In his opinion the method had no value in differential diagnosis.

Zimmermann[31] has recorded 8 cases, 6 successful, 2 unsuccessful. The latter were one case of carcinoma of pleura and one case which later turned out to be empyema. Zimmermann noted a marked diuresis following the injections. He thought the results were due to a short-lived leucocytosis.

The most valuable series recorded is that reported by Marcou[19] in 1909. This author used the method in 82 patients during four years. He claimed that all were cured. Only in one single case was it necessary to evacuate the fluid; in all others the autoserous injections were sufficient. He had watched these patients for two, three and four years after the injections and found that the fear of a generalized tuberculous infection was groundless. The results of the treatment he observed were: (1) Slight evanescent rise of temperature the evening of the day on which the injection was made; (2) increased diuresis; (3) gradual disappearance of the fluid. His theory is that an "antiserose" (antipleuritic substance) is formed which causes the absorptions. He used the method in all cases of pleurisy with effusion and hydrothorax, no matter what the cause; the only condition being that the fluid must not be purulent.

Schnutzgen[25] also tried autoserotherapy in a wide range of conditions. His statistics have the further value that his results were checked by *x*-ray examinations and by exploratory punctures after apparent cures. His cases include hemorrhagic and even beginning purulent pleurisies, hydrothorax, ascites, hydrothorax with ascites, pericarditis. Of this group (number of cases not stated) all were failures save two. These two were as follows: 1. Pleuritis exudativa sinistra. Pericarditis. Myodegeneratio cordis. Ascites (slight) Edema. In this case theocin was administered by suppositories simultaneously with the injections. 2. Bronchitis diffusa chronica. Hypertrophia cordis sinist. Polyserositis (hydrothorax). Prolapsus uteri totalis. Two injections with complete disappearance of hydrothorax. He also employed the method in 15 cases of serofibrinous pleurisies, 11 tuberculous and 4 nontuberculous. 14 were successes. In the other case evacuation had to be performed on account of dyspnea on the seventh day, but Schnutzgen thought that this one too would have been a success could he have waited.

Szurek[27] has reported 9 cases of autoserotherapy. Of these 8 were tuberculous serofibrinous pleurisy, and one was a leukemia with pleural, pericardial and peritoneal effusions. He used from two to ten injections, each 1 or 2 c.c. every three days. The case of leukemia was not influenced. Of the tuberculous cases one was small, one was moderate, and the rest were large collections. All were old effusions and no longer increasing with one exception. In 3 cases the effusion entirely disappeared. In 2 cases there was improvement but not complete disappearance of the fluids. In 2 cases there was no result.

Dodal[4] has reported 17 cases of autoserotherapy of pleural accumulations with the following results. 3 cases had to be evacuated after one injection because of threatening symptoms. The other 14 he considered successful as follows:—

Complete cures. . .	4
Good results. . .	4
Satisfactory results. . .	2
Partial results. . .	4

He does not explain his qualifying terms.

Dodal noted an increased diuresis. He found that the temperature and general conditions were favorably influenced and that the exudates disappeared promptly, in some cases after a single injection. In tuberculous cases there was a rise of temperature. He attributed the results to the action of antibodies.

In 1910 Levy-Valensi and Pouzin[18] reported 7 cases of pleural effusion in which they took out amounts of fluid varying from 10 to 20 c.c. *None was reinjected.* In 5 instances the remaining effusion began to be absorbed quickly so that the signs had almost disappeared in a week. In 1 of the 2 unsuccessful cases the withdrawal of 500 c.c. of fluid was shortly afterwards followed by a reaccumulation. On the other hand, where absorption followed exploratory puncture the fluid never returned.

Audibert and Monges,[1] in 1910, treated a case of ascites of hepatic origin with twelve injections of the ascitic fluid at intervals of six days, beginning with three c.c. and never exceeding ten c.c. There was no pain, no local reaction nor any apparent influence on the temperature or elimination of chlorides and urea. The main effect was a copious and persistent polyuria which brought about a notable improvement. The circumference of the abdomen decreased from 94 cm. to 87cm. They also withdrew salt from the diet, but they did not think that the result could be attributed to this. The patient had previously been tapped every fifteen days for six months.

Later in 1910 Roque and Cordier[22] reported 6 more cases of autoserotherapy in ascites. The results were not encouraging. Their cases were as follows:—

1. Cancer of stomach. Cancerous ascites.....Failure
1. Peritoneal tuberculosis (osseous and glandular tuberculosis in addition).....Failure
3. Laennec cirrhosis; 1 favorable; 1 failure; 1 indifferent
1. Mitral regurgitation. Edema. Ascites.....Failure

Ebler[6] (1910) has adopted an interesting modification of the method. He treated a case of tuberculous peritonitis making a permanent fistula leading from the peritoneal cavity to the subcutaneous tissues through the separated recti. The skin incision was closed tightly. The ascites was thus drained and absorption induced by continuous autoserotherapy. The patient improved rapidly, gaining twenty-five pounds. There was no return of the ascites.

As far as I have been able to determine my own cases[17] were the first recorded in English or American literature. I give a brief synopsis of these here:

Case 1.—A. S. Mexican, male; twenty-nine years old. Acute pleurisy (left) with effusion to level of eighth rib posteriorly. Grocco's triangle on right side, apex reaching to three inches from vertebral column. Autoserotherapy on eleventh day of disease. 15 c.c. of straw-colored fluid withdrawn and 7½ c.c. reinjected. No local nor general reaction. Complete disappearance of effusion four days after injection.

Case 2.—J. C. L. White, male, nineteen years old. Laborer. Chronic parenchymatous nephritis with general anasarca, ascites and hydrothorax (left). Previous therapeutic effort without avail. Autoserotherapy (7½ c.c.). No local or constitutional reaction. Immediate and very marked increase in diuresis. Disappearance of hydrothorax and edema within three days; slightly slower disappearance of ascites.

Case 3.—G. D. S. White, male, fifty-eight years old. Hepatic cirrhosis (Laennec) with ascites of eight years' standing. Repeated tapping for extreme ascites during first few months, then Talma operation, following which eight years of comparative comfort, but with persistent ascites. Repeated autoserotherapy (three injections of 5 c.c. to 10 c.c. at intervals of three or four days) was followed by diarrhea, but no increase in diuresis. Due to the diarrhea ascites diminished and the circumference of the abdomen decreased from 91.2 cm. to 84.25 cm.

To these I may add the following new cases:—

Case 4.—W. B. White, male, forty-seven years old. Laennec cirrhosis of liver. Ascites. Edema of legs. Tapped twice previously with recurrence. Urine measured before experiment=2 quarts in 24 hours (May 13th, 1910). Greatest abdominal circumference 95.5 cm. (10 cm. above umbilicus). Level of fluid (standing) 8 cm. above umbilicus. Autoserotherapy, 4 c.c. withdrawn and 2 c.c. reinjected. Temperature 98 3/5° F.

May 14th. No reaction constitutional or local.

May 16th. Urine, four quarts daily; two stools daily. No medication of any sort.

May 24th. Urine, four quarts daily; intake of fluids, water, ten ounces, milk, one quart daily. Patient vomited large quantity of blood. May 23rd. Ascites practically gone. Abdominal circumference 81.25 cm.

Case 5.—J. W. Colored, male, thirty-eight years old. Cirrhosis of liver. (Laennec? Syphilis?) Autoserotherapy repeated three times. October 10th, 1910, 5 c.c.; October 12th, 5 c.c.; October 17th, 10 c.c. No reaction. No influence whatever on ascites.

Case 6.—D. D. Colored, male, thirty-four years old. Laborer. Consolidation of both apices; no rales. Pleural effusion of right side reaching to level of spine of sixth dorsal vertebra. Grocco on left to level of spine of ninth dorsal vertebra. No cough or fever. No T. B. in sputum. Autoserotherapy two months after beginning of pleurisy (pain in side).

Autoserotherapy. November 26th, 1910, 12 c.c. withdrawn and 5 c.c. reinjected.

December 10th, 1910. 10 c.c. withdrawn none reinjected on account of faulty needle.

December 15th, 1910. Autoserotherapy 10 c.c.

December 29th, 1910. Autoserotherapy 5 c.c.

January 5th, 1911. No change in condition. Withdrawal of one pint of straw-colored fluid from right pleural cavity.

Conclusions.

In view of my limited experience with autoserotherapy I do not feel qualified to draw any definite conclusions as to its value. The striking diuretic effect in cases 2 and 4 has not failed to impress me as other investigators have been impressed by similar experiences. It seems to me that were there no other problem involved this one would be worth further investigation—namely, Why and how should the hypodermic injection of a patient's own serum stimulate diuresis? It is to be noted that the diuresis was caused in these two cases (and in many other cases in the literature) by the injection of a simple transudate (non-inflammatory). I am inclined, therefore, to agree with those authors who attributed the beneficial effect of the injections to the increased output of urine. At any rate, we must agree that this must be the case in the non-inflammatory cases. The original basis for autoserotherapy, that is, that the pleural exudates contain tuberculin would hold good only for tuberculous cases. In cases of pleurisies due to other infections we might, in line with this theory, assume that the exudates contain suitable antibodies and that the good results might be due to these. In this connection the greater value of autogenous vaccines over heterogenous vaccines is to be remembered. Browning[2] in a theoretical paper in 1905 advocating the use of the patient's own serum (not obtained from exudates or transudates) points out that the procedure has a rational basis when explained

by the side-chain theory. He instances the experiments of V. Jez (who treated 10 cases of erysipelas with serum (5 to 10 c.c.) obtained from blisters produced on the bodies of the patients themselves. This was said to be followed by a rise in temperature and a rapid improvement of all the symptoms.

Finally, I may say:—

1. The method is simple and without danger.

2. There is still available only insufficient evidence as to its value and its mode of action.

3. At least two problems are presented in its study:

   (a) Is its action a reaction of immunity?

   (b) What causes the diuresis and how?

Investigator.	Where Quoted.	Number of Cases	Successes	Failures	Remarks.
Gilbert (Original)	Tschigaeff	17	17	0	All tuberculous pleurisies.
Gilbert (2nd report)	"	10	10	0	" " "
Bourget	"	4	4	0	" " "
Andreae	"	1	1	0	" " "
Maillard	"	1	1	0	" " "
Scarpa	"	9	9	0	" " "
Mongour and Gentes	"	15	3	12	11 positively tuberculous; 4 probably tuberculous.
Mongour and Gentes	"	4	4	0	Non-tuberculous.
Tschigaeff	"	8	8	0	3 probably tuberculous.
Fede	Szurek Schmidt Jahr 1898.	5	5	0	1 tuberculous.
Szurek	Szurek	8	3	3	2 doubtful results. All tuberculous.
"	"	1		1	Leukemia.
Schnutzgen	Schnutzgen	15	14	1	Sero-fibrinous pleurisy of 14 successes, 11 tbc., 3 non-tbc.; 1 failure, non-tbc.
"	"	?	1		Pleurisy, pericarditis, mycocardial degeneration. Ascites. Edema. Also used Theocin by suppository.
"	"	[?]	1		Polyserositis (Hydrothorax) Chr. Bronchitis. Cardiac Hypertrophy.
Marcou	Marcou	82	82		
Mongour	Mongour	2	1	1	Tuberculous pleurisy.
Donzello	J. A. M. A. Jan. 2, '04	5	4	1	
Stasevich	Stasevich	20		20	Absorption not hastened by injection. All tuberculous pleurisies.
Tschigaeff 2nd series.	Stasevich	8	6	2	
Geronzi	Geronzi	8	8		All showed immediate marked improvement. Probably all tuberculous.

Jovane	Jovane	5	5	1	1 death. 1 tuberculous pleurisy. 4 sero-fibrinous, possibly none tbc.
Jovane	Jovane	4	3	1	1 death. Tuberculous peritonitis, ages 3-8.
Jona		15	15	0	9 tuberculous pleurisies. 1 traumatic pleurisy.
Carletti		12		12	Unfavorable.
Fontana	Fontana	9	3	6	He counts all successes although evacuation had to be done in 6 cases. 2 tuberculous, others uncertain.
Enriquez and Weil		3	3 (?)		Not available.
Zimmermann	Zimmermann	8	6	2	2 failures were 1 carcinoma of pleura, 1 case later empyema.
Roque and Cordier*	Roque and Cordier	6		6	Glandular tuberculosis, Mitral regurgitation. Laennec cirrhosis (3 cases). Cancer of stomach.
Dodal	Dodal	17	14	3	4 good, 4 satisfactory, 4 partial results. 4 complete cures.
Audibert and Monges	Audibert & Monges	1	1		Hepatic ascites.
Lemann		6	3	3	3 hepatic ascites. 1 tuberculous pleurisy. 1 sero-fibrinous pleurisy acute. 1 chr. parenchymatous nephritis with poly-serositis (hydrothorax and ascites).
		309	232	75(a)	

*All Ascites.

**To this must be added 2 doubtful cases of Szurek's.

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THE PRESENT STATUS OF PNEUMONIA.

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Regarding a book, it was said in the presence of Lessing that it contained some things that are true besides much that is new. Lessing replied: "Yes, that is so, but it is a pity that that which is true is not new, and that which is new is not true."

In looking over the extensive literature of pneumonia, I am led to conclude in the words of Lessing—namely: "That which is true is not new and that which is new is not true." In substantiation of this conclusion, I refer you back many centuries to Aretimus who so splendidly described the disease, and to Hippocrates and the old Greek physicians who were at that time very familiar with the disease.

Comparatively little has been added to the study of physical signs and to the description of the morbid anatomy since Laennec's masterly work in 1819. A more recent advance was the discovery of the cause of the disease, micrococcus lanceolatus, by A. Fraenkel in 1884.

Of all the acute infectious diseases, pneumonia is the most fatal, and ranks next to tuberculosis as a cause of death. In order to fully appreciate its ravages, it is well to compare it with other infectious diseases.

Consumption, during the census year 1900, claimed 111,059 victims in the United States alone; pneumonia was a close second, with 105,971 deaths; other infectious diseases as a cause of death, expressed in round numbers, were as follows:—

Diarrheal Diseases	47,000
Typhoid Fever	35,000
Cholera Infantum	26,000
Influenza	17,000
Diphtheria	16,000
Whooping Cough	10,000
Septicemia	7,000
Scarlet Fever	6,000
Meningitis	4,000

An infectious disease ordinarily means a preventable disease. The following record shows what preventive medicine has done for the various infectious diseases in the United States since 1890. The death-rate from consumption has decreased 54.9 per 100,000; diphtheria, 52.5; cholera infantum, 31.9; diarrheal diseases, 19; typhoid fever, 12.5; malaria, 10.4; whooping cough, 3.1; and scarlet fever, 2.7. These factors largely

contribute to the prolongation of the average human life from 31.1 in 1890 to 35.2 in 1900. The same relative increase has continued during the past decade, and it is estimated that the present average is between thirty-eight and forty years, which is just twice the average length of human life in the sixteenth century.

The steady decrease in the death-rate and increase in the average prolongation of human life has been accomplished largely by the introduction of simple measures. Thus, tuberculosis has been checked by improvement in methods for early diagnosis, disinfection of sputum and education as to the therapeutic value of sunshine, fresh air and food. Typhoid fever, by the purification of the water and milk supply, proper nursing and disinfection. Diphtheria, by disinfection and serum. Scarlet fever, by isolation and disinfection. Diarrheal diseases by proper feeding and sterilization. Malaria and yellow fever by the annihilation of the species of mosquitos causing these diseases, and epidemic meningitis by the recent discovery of Flexner's serum.

What part does pneumonia play in this onward march of progress? It is sad to relate that this disease, which kills more human beings than typhoid fever, diphtheria, scarlet fever, influenza, whooping cough, septicemia and meningitis combined, is allowed to run rampant. The profession has not succeeded in checking its fatal influence; on the contrary, it is said to be on the increase.

The question may be asked what is being done to combat the fearful onslaught of the disease? It is a sad commentary to have to acknowledge that as far as measures are employed to prevent pneumonia, we are not even using the equivalent of the three R's in the most elementary school training. These equivalents, I consider, are Education, Isolation and Disinfection. I believe the time is coming when these methods will be employed in pneumonia just the same as we employ them now in tuberculosis, typhoid fever and diphtheria.

These facts are appalling, and should naturally lead one to inquire into the mode and character of infection in pneumonia.

The organism, micrococcus lanceolatus, was first discovered in 1880 by Surgeon-General Sternberg by inoculating rabbits with his own saliva. Four years later, A. Fraenkel found that this same organism was the most frequent cause of pneumonia. One must bear in mind that pneumonia is only one of the many effects produced by this organism. It occurs in the mouth of about 50 per cent. of normal individuals, and is found relatively more frequent during the midwinter months.

Darling found the organism in the accessory nasal sinuses in 92 per cent. of autopsies on patients who had died of pneumonia. He also found pneumococcus sinusitis in 28 per cent. of control cases, in none of which death was due to pneumococcus infection. Pneumococcus sinusitis also coexisted in thirteen cases of pneumococcus meningitis examined. In all of these cases, the character of sinusitis indicated that it was

an antecedent infection. Darling came to the conclusion that in such diseases as pneumonia, pneumococcus meningitis, endocarditis, etc., the organisms find their portal of entry through these infected sinuses.

Since the germ is found in the mouth of perfectly healthy individuals, we may conclude that other factors must come into play before the disease can be produced. We may therefore assume that in addition to the presence of the specific organism there are some other exciting factors or individual predisposition. The latter may be found in the debilitating influence of alcohol, poor nutrition and bad hygienic conditions. The exciting factor is frequently a cold or it may be a bronchitis, either simple, or secondary to influenza, whooping cough, etc.

The disease is unquestionably communicable. Many epidemics of pneumonia as well as other pneumococcus affections, such as conjunctivitis, have been reported.

In 1907, I had the opportunity of studying an epidemic in Baltimore which closely resembles grippe. It was characterized by severe catarrhal symptoms of the upper air passages with a tendency to membranous exudates on the nasal and pharyngeal mucous membrane and a mucopurulent conjunctivitis. Dr. Stokes, who made a bacteriological study, found the pneumococcus to be the cause of this epidemic. We reported fifty-six cases in all; most of which were cases occurring in house infections. Upon careful inquiry, it was ascertained that this particular epidemic was not confined to Baltimore, but prevailed extensively in many of the larger communities in the Eastern States.

Dr. Fabyan (*Johns Hopkins Hospital Bulletin,* Nov., 1907) gives a splendid resumé of epidemic pneumonia with a report of 5 cases occurring in one family in Baltimore. Epidemics in ships and prisons are not uncommon. Tyson describes an epidemic in which more than half of the members of a crew were attacked in rapid succession. Out of the crew of eight hundred and fifteen men, one hundred and ten developed the disease, and those transferred to the hospital communicated the disease to some of the inmates. It is not an uncommon occurrence for a nurse to contract the disease from a patient or for new cases to develop from existing pneumonia in hospital wards.

Symptoms.—As a rule, a true case of croupous pneumonia runs a typical course and is self-limited. We are still in doubt as to the period of incubation, but in all probabilities it is brief. Prodromal symptoms are exceptional. If they do occur, they are in the nature of a catarrh. The onset is abrupt. The first symptom is usually a severe, prolonged chill, lasting sometimes for one hour. A rise in temperature quickly follows or it may rise coincidently with the chill. At the beginning, the patient has the appearance of being very ill. There are a number of symptoms which as a composite make a very characteristic clinical picture of pneumonia. So much so, that it has been my practice to send students through the wards to diagnose pneumonia by mere inspection; and it is supris-

ing with what success they meet. This characteristic group of symptoms includes the active position of the patient, the respiratory distress, the expiratory grunt, the anxious expression, the bright eyes, the dusky, cyanotic face with circumscribed flushing of one or both cheeks, the dilating nostrils, the herpes, the dry, suppressed cough together with the tenaceous, rusty sputum.

The following symptoms deserve special consideration:—

Temperature.—The rise is rapid, reaching the fastigium within twelve to twenty-four hours. In childhood and old age, it is less rapid and apt to be more irregular. It usually runs a regular course of continuous type of fever until the crisis is reached. There is occasionally a pre-critical rise of a degree or more, or there may be a drop of a degree or two in what is known as the psuedo-crisis. In delayed cases and in children the defervescence is often by lysis.

A temperature of 103 or 104° F. is not an unfavorable sign in pneumonia as it means a reaction. In the gravest forms, as in the aged and alcoholics, the rise in temperature may be very slight, and indeed they may run an afebrile course.

Pain.—The parenchyma of the lung is not supplied with sensory nerves and therefore no pain occurs in central or deep seated pneumonias. The pain indicates an associated pleurisy. It has the same stitch-like, lancinating character that one finds in simple pleurisy, and is aggravated by deep breathing and cough. If the diaphragmatic pleura is involved, the pain is referred to the epigastrium or the region of the appendix. Cases of this kind have been frequently diagnosed appendicitis and some of them have been operated upon. Ten cases, in which an operation was performed with two deaths, have been reported.

Dyspnea.—Respiratory movements are shallow and hurried, and usually accompanied with an expiratory grunt. There are cases however, in which pain, cough and dyspnea are singularly absent. These cases occur most frequently in the masked pneumonia of drunkards, the aged and the terminal pneumonias of chronic exhausing diseases. The factors concerned in the production of dyspnea and toxemia, fever and arrested function on account of lung consolidation.

Cough.—Early in the disease, the cough is hard and dry, due to pleural irritation. Later, it is moist and productive. It is nearly always associated with pain. At the time of crisis, the cough becomes loose and the expectoration free.

Physical Signs.—There are certain signs which are frequently misinterpreted, and therefore lead to error in diagnosis. The following are among the most important:

1. Sometimes in the most extensive consolidation, as in massive pneumonia in which the bronchial tubes are filled with exudate, tactile fremitus is diminished or may be entirely absent. Vocal fremitus and tubular breathing are similarly modified. The character of the signs may change after forced cough.

2. When a patient is lying on one side, there is a contrast which occurs normally in the percussion note of the two sides.

3. In the early stage, breathing is often quiet and suppressed, not unlike pleural effusion. This sign is suggestive, and should put one on his guard.

4. The fine crepitation occurring in the early stages of the disease at the end of inspiration, is probably a fine pleural crepitus, instead of crepitant râles.

5. Tubular breathing is caused by the laryngeal and bronchial sounds being conducted through a consolidated area. It does not occur if the larger tubes are filled with exudate.

6. To differentiate between pleural friction and bronchial rales, have the patient cough. If they are bronchial in origin, the rales explode and the character changes.

7. We may have a central pneumonia without physical signs. The diagnosis is largely made from the character of the cough, expectoration and sputum.

Circulatory Symptoms.—The heart was not considered such an important factor in pneumonia until 1874, when von Jürgensen called attention to the fact that the danger to life first threatened the heart and that death was due to cardiac insufficiency. This insufficiency is brought about by the increased resistance in the pulmonary vessels, which increases the work of the right heart, and the toxic albuminoids which are produced by the metabolic activity of the pneumococcus. The latter is directly injurious to the myocardium. Thus the heart becomes more readily exhausted, and this exhaustion diminishes its power to overcome the pulmonary resistance, hence the dilatation. This was regarded as the most common cause of death in pneumonia until Pässler's studies and observations were reported a few years ago. Clinicians of to-day agree generally with Pässler that the most common cause of death, as far as the circulatory apparatus is concerned, is a paralysis of the vasomotor centre in the medulla oblongata.

These two circulatory disturbances present entirely different clinical pictures, and call for entirely different lines of treatment. Forcheimer describes them as follows: "In cardiac insufficiency, the patient is cyanotic; there is great dyspnea; increased activity of all the obligatory as well as accessory respiratory muscles, and all the other evidences of dyspnea are present. On examination we find the jugular veins overfilled, the movements of the heart very much increased, especially those of the right ventricle; on percussion there is an increased heart dulness to the right from 1 to 3 cm.; on auscultation there is accentuation of the second pulmonic sound which disappears as the case progresses. Frequently edema of the lungs is also found. The liver is usually enlarged; when the condition lasts for over twenty-four hours it is very much enlarged. The patient dies in asphyxia—never in collapse, unless this condition is com-

bined with vasomotor paralysis. The first evidences of vasomotor paralysis are rapidity of heart and sinking of blood-pressure; with this, or shortly afterward, there comes tympanites; the patient then presents an exsanguinated appearance, with beginning evidences of collapse; the pulse becomes irregular, empty and so rapid that it cannot be counted; symptoms of cerebral anemia begin to appear—delirium, hallucinations, sometimes great restlessness; they gradually disappear to be superseded by stupor and coma; the collapse increases; the heart becomes more irregular; the heart sounds disappear, and the patient dies."

One should never fail to listen to the second pulmonic sound. An accentuation of this sound is a favorable sign. When it becomes less audible, it signifies impairment of the right heart. In early childhood, this rarely occurs, owing to the fact that the right heart is relatively more developed at birth than the left.

The blood-pressure is usually low in pneumonia and a sudden drop is a serious omen, and means death. A slow gradual decrease of 20 mm. or more indicates cardiac asthenia and calls for stimulation. The toxicity of the blood is increased.

The pneumococci are demonstrable in the blood in nearly all cases, frequently appearing before the physical signs. They generally disappear from the blood as soon as the fever subsides, but they have been found to persist for fifty-six days. In most cases of pneumonia, a marked leucocytosis is present, numbering from 12,000 to 40,000 per cm. The increase is usually in proportion to the rise in temperature. A leucocytosis, like fever, indicates a reaction and represents the degree of defence against the invading pneumococci. In malignant pneumonia, leucocytosis may be absent. The coagulability of the blood is increased. This is probably due to an increase in the fibrin ferment, the result of an extensive disintegration of the leucocytes.

Nervous Symptoms.—Headaches are common, and convulsions are frequent in children. There is a type of pneumonia, occurring in children, known as the cerebral type, which is characterized by high fever, headache, convulsions, delirium, tremors, and perhaps rigidity of the neck. Such cases are frequently diagnosed as meningitis. Alcoholic patients frequently develop delirium tremens, others maniacal symptoms or uremic symptoms. Apex pneumonias are more apt to be associated with delirium than basilar pneumonias.

Treatment.

"The great instruments to be employed in the treatment of inflammation of the lungs are blood-letting, tartarized antimony and mercury; of these blood-letting is the chief." This statement is quoted from Watson's "Practice," 1845. In the light of modern therapy, this seems quite obsolete, yet it is doubtful whether the results to-day are better than they were in

the days when every patient suffering with pneumonia had to be bled.

If rational therapy is to be employed, prophylactic measures must be instituted. The reason for this is plainly evident from what has been said regarding the nature of the infection and the contagiousness of the disease. I may mention here, parenthetically, that a colleague, Dr. G. Woltereck, is attending at this time, three cases of pneumonia in one family, in which there is a strong presumptive evidence of a father and child contracting it from another child who was suffering from the disease. One may ask the question, "Would isolation have prevented the infection of the father and the second child?" It seems to me that isolation, in this case, would have protected the family; and, if it were justifiable in this instance, it certainly should be more generally adopted. The expectoration and nasal discharges should be as thoroughly disinfected as tuberculous sputum. There is little doubt in my mind that bad mouth-hygiene favors the development of pneumonia by paving the way for pneumococcus sinusitis, which, as pointed out, frequently antedates a true pneumococcus infection. Any inflammation of the nasal sinuses should therefore be promptly treated.

As sunshine and fresh air are inimical to the organism, living apartments should be both well lighted and well aired.

The ideal treatment for pneumonia would be a protective serum, but thus far, no very satisfactory results have been obtained. The same may be said of vaccines, leucocytic extracts, etc. Until some specific agent is discovered, we must content ourselves with the knowledge that three-fourths of all cases of pneumonia recover without treatment, and that too vigorous treatment may actually do harm. The general management should be much the same as that of typhoid. Frequent examinations of the chest in severe cases should be avoided as they tend to overtax the strength of the patient and may result seriously. Fortunately, the indications to be met by treatment are best disclosed by the general symptoms of the patient.

The diet should be light with plenty of fluids, such as water, albumin, milk, lemonade, strained cereals, eggs, etc.

Measures directed toward the arrest of the disease, are of doubtful value. Early bleeding has had its advocates but is now rarely resorted to. Tartar emetic formerly extensively used, has been practically abandoned. Veratrum viride finds favor in the hands of some eminent clinicians, and digitalis in large doses has recently been highly extolled.

Symptomatic Treatment.

Pain.—This symptom is best controlled by morphine; small doses if given hypodermatically usually relieve the pain. However, it should not be employed at or near the time of crisis. When the pain is not severe, Dover's powder may be administered instead of morphine. Locally, the ice-bag frequently affords great relief. Hot applications may be em-

ployed, but, as a rule, they are not as efficacious as the cold. Blistering should be avoided.

Delirium.—This symptom may be due to (a) toxemia, (b) fever, (c) inanition or impaired circulation, and (d) meningitis. The treatment naturally depends upon the cause of the delirium. If due to toxemia, tepid baths and ice-caps should be employed. If due to high fever, use cold baths and ice-caps. The delirium, associated with inanition due to deficient circulation, is frequently relieved by stimulants, such as strychnine, alcohol and camphor. Delirium due to complicating meningitis is practically hopeless, although temporary relief may be obtained by lumbar puncture. Hydrochlorate of quinine in doses of 5 to 10 grains is recommended for mild forms of delirium.

Sleep.—It is essential that patients suffering with pneumonia, get sufficient sleep, for lack of it will aggravate any circulatory or nervous disturbances of the patient. The most valuable drugs to meet this indication are trional, veronal and morphine.

Fever.—Ordinarily no treatment for fever is necessary. In hyperpyrexia, especially with delirium, quinine hydrochlorate in 7½ grm. doses may be administered as recommended by Aufrecht. Phenacetin, antipyrin and pyramidon when combined with caffeine may be of service. The most satisfactory treatment for fever is the application of cold in the way of bath, cold packs or ice compresses to the chest. Hydrotherapeutic measures are of more value in controlling the functions of the heart, nervous system, respiration and elimination than in reducing temperature. In toxemia a tepid bath is more efficacious than a cold bath.

Cardiovascular Symptoms.

Vasomotor Paralysis.—Since this condition gives rise to the most serious symptom-complex in pneumonia, steps should be taken to prevent its occurrence. For this purpose, A. Fraenkel recommends digitalis, administering as much as 0.75 grm. a day for three or four days, although he does not give it in cases in which such large doses would be ordinarily contraindicated. Forcheimer recommends caffeine in doses of 1¼ to 5 grains every four hours. Baths and fresh air, by their counteracting influence on the toxemia, diminish the tendency to vasomotor paralysis. Sufficient sleep is a factor of equal importance in inhibiting this vasomotor phenomenon. If, in spite of this treatment, the symptom-complex develops, active treatment must be begun at once. Forcheimer recommends the following: "Adrenalin is employed for the purpose of contracting the blood-vessels of the splanchnic area, for which it has an elective affinity; hypodermoclysis or venous transfusion with large quantities of normal saline solution for the prevention of asystole, one or two ice-bags on the abdomen, which reduce the pulse probably by stimulation of a splanchnic reflex." Adrenalin, 1 c.c. of a 1/1,000 solution is recom-

mended for hypodermoclysis. This amount should be administered every two to four hours, according to the symptoms. After twenty-four to thirty-six hours, caffeine may be used instead. Esser has obtained very good results by the use of camphor in large doses, hypodermatically.

Cardiac Insufficiency.—The usual routine treatment may be employed for this condition. Preparations of digitalis, either by mouth or better by hypodermic injections are indicated. Camphor or caffeine, either independently or in conjunction with digitalis, are often of great value. It is in this condition that blood-letting offers the greatest relief in pneumonia.

214 E. Preston Street.

THE USE AND ABUSE OF TUBERCULIN.

By William C. Voorsanger, M. D., of San Francisco.

Without doubt tuberculin has come to stay, and will become firmly established as a valuable adjuvant to our therapeutic armamentarium for conquering the dread disease, pulmonary tuberculosis.

It must also be apparant from a close study of tuberculin literature of the last five years that its use as a therapeutic agent is steadily on the increase in all countries. According to Bandelier and Roepke, its use in the German sanatoria has doubled between the years 1905-1908, and since that time is steadily on the increase. American literature, especially the reports from our large sanatoria and clinics, is replete with case reports successful and otherwise, of the use of the various tuberculins.

But if the above facts are apparent, it is doubly apparent to the physician in any large city, whose special work is the treatment of pulmonary tuberculosis, that many abuses are being practised by brother practitioners, not wilfully, but through ignorance of the properties of the remedy they are using, the dosage and the conditions under which it should be given.

We are working to-day in the third epoch of tuberculin as an immunizing agent. The first was Koch's discovery of this prepartion in 1890 and its world-wide use for a short period thereafter with complete failure due to the administration of excessive doses of a misunderstood toxin. Epoch two represents the period of many years when tuberculin was generally discarded by the profession at large, but faithfully and carefully experimented with by such men as Koch in Germany and Trudeau in this country, until they could present to us through the discoverer a new tuberculin and a new and better method of administration, with better theories for its action, with better results, and with no direct fatalities. Now comes epoch three, marking once more the world-wide use of this remedy, which, as it improves, may yet become a true specific. The question for the profession at this time to answer is, Are we going to have epoch four, in which we shall see this valuable remedy discredited through blundering misuse?

It has always seemed strange to me that physicians will begin a course of tuberculin treatment with no other knowledge of the agent they are using than that contained in the circular of information wrapped around the serial dilution prepared by one or another firm. The same physician would not open an abdomen singlehanded, or set a fractured limb upon the written directions of a surgeon. And still I firmly believe that to perform

the former ignorantly, is as gross an injustice to his patient as to perform the latter, without a knowledge of surgical procedure. The common procedure to-day with the great majority of physicians is to purchase a set of serial dilutions, enough to last from six months to a year, and begin administration with two drops of No. 1 dilution and increase as directed until dilution No. 2 is reached, and so on. I do not doubt for one moment that the firms manufacturing tuberculin have figured these doses scientifically and correctly, and that each new dose represents approximately an increase of 1/10 c.cm., and that the tenth dose means 1 c.cm. of dilution No. 1, which may be 0.001 mgrm. or 0.0001 mgrm., depending upon the preparation used. But this means working blindly upon the word of a printed circular.

Does the physician who uses this method receive any instruction as to the kind of case upon which to employ tuberculin? Does he know what a reaction means? Does he know how to avoid reactions? Does he realize that he is giving his patient a poison, a toxin, and not an antitoxin? My own experience teaches me that none of these questions are answered for him, and that he mostly gropes blindly in the dark, injecting dose after dose of a preparation which is a two-edged weapon with great capacity for good or evil, depending into whose hands it is placed. Too often I have been asked to see an "incipient" case of tuberculosis which has received one or two months' treatment with tuberculin, increased serially according to printed instructions, and find a fairly advanced case, with high evening temperature, dyspnea, and loss of weight, where the proper treatment would be a long course of rest in bed and no tuberculin. I firmly believe that the real reason why more damage is not done is because in many cases the higher dilutions have lost their strength before they are administered and the physician, after the first two months, is injecting an inert solution. It seems reasonable to assert that no one can guarantee a dilution of tuberculin which is over three months old, and still physicians constantly procure a set of dilutions which, if administered properly, would take fully six months before the last strength is reached. It is perhaps most fortunate that when the high dilution is reached, it is inert and can do no harm.

Such a condition of affairs as above depicted must eventually discredit the use of tuberculin, either because damage may be done through administering it to a wrongly selected case, or in increasing the dose against the proper indication to go slowly, or, what is still worse, through obtaining no result by the injection of an inert solution. The practice of procuring enough tuberculin in dilution to last through an entire course of treatment cannot be too strongly condemned. If no good laboratory is at hand where dilutions can be made up properly and fresh and in quantity not exceeding ten injections—in other words, one series—then the physician must purchase the pure tuberculin and make up his own dilutions or have a competent laboratory worker make them for him.

What is also often forgotten is that we inject a toxin when we give tuberculin, and that it is not an antitoxin, that it should not be dubbed "serum treatment," having absolutely no vestige of serum in it. Tuberculin in any form is a product of the tubercle bacillus, either in whole or in part.

A physician should have this fact thoroughly ingrained before undertaking to give a course of tuberculin therapy. He should not take the directions of the firm selling tuberculin unqualifiedly, but he should draw his own deductions after mastering certain theories upon which the action of tuberculin and its reactions are based. I do not care within the scope of this paper to analyze in detail these theories. Whether we believe in the Arloing and Courmont agglutinin theory, the Bordét and Gengou antibody theory, or the most recent antituberculin hypothesis of Wassermann and Bruck, we should know one important fact:—that in administering tuberculin, a toxin, into the human system, we wish to obtain an overproduction of antibodies. Our aim, as I have pointed out in a previous publication, is to rouse to action the natural defenses already in the body, to stimulate them, and to gain as great a production of them as possible. I am quite in accord with Roemer and Joseph who state that it is a matter of great indifference whether we call tuberculin a toxin, an endotoxin or a toxo-endotoxin; also whether we differentiate the various above-named theories to explain tuberculin immunity. Only the biological chemist is equipped properly for a thorough understanding of many of these complex theories, but any physician should understand the constituents of the poison he is giving, the general theory of its action, and what he is trying to accomplish.

I personally believe in tuberculin. My own studies and experiences have made me come to the conclusion that, within limits, it aids and quickens the arrest or cure of a tuberculous patient. What a pity that Koch did not anticipate Ehrlich's example and patent his product, Tuberlin, just as the latter has patented "606!" Thus would we have avoided a most confusing state of affairs, wherein we see over eighty different kinds of tuberculin placed upon the market. Is it at all surprising that the average physician who has had neither time nor inclination to become expertly versed in this subject, should become very much puzzled in attempting to select a tuberculin, and should finally follow the lines of least resistance and take the one proposed by an enterprising and intelligent biological salesman? I grant that, with so many tuberculins in existence, each with its champion or set of champions, it becomes a difficult matter to choose the kind of tuberculin one wishes to use. It is indeed of not very great importance, so long as we are consistent in the use of the particular form used, be it T. R., B. E., B. F., or the most recent Spengler's I. K. (Immun-Koerper, or body). I personally have always used T. R., because since every tuberculin is a product of the tubercle bacillus, it seems rational that that tuberculin containing

the entire bacillus should be the one to use. Besides many investigators the world over give favorable results after using T. R. during the length of time, and the only objection ever voiced against it was its great toxicity and its capability of producing reactions, a condition easily overcome if we start with low enough doses and carefully regulate the increase. I use bovine tuberculin because, following the example of Nathan Raw, who published his brilliant results in the *Lancet* of February 15th, 1908, I was able to get a very good percentage of success in 28 cases (See *Cal. State Med. Journal,* Oct., 1910), which at this date has doubled, and as I continue its use, my results continue satisfactory. In my own mind I feel certain that bovine T. R. is the logical tuberculin with which to treat a case of tuberculosis due to the bacillus typus humanus (pulmonary form), and that Human T. R. is the proper tuberculin to administer for tuberculosis of the typus bovinus (surgical and glandular form).

The use of bovine tuberculin has brought me to the belief that its greater curative power lies in its possible ability to produce a greater number of antibodies. Still the whole subject of tuberculin therapy is so empirical that each investigator must choose his own form of tuberculin and watch his own results. No one can deny that we are still experimenting, that we are not dealing with a specific, and that we do not accomplish an immunity to tuberculosis, but an immunity to tuberculin. How important then to approach the use of tuberculin with extreme caution, with even fear, until such time as one feels he is competent to appreciate the minutest reactions and negative phases which may occur during a course of tuberculine treatment!

First and most essential in beginning the use of tuberculin is your own belief in its efficacy. In a recent article, Bandelier of Gorbersdorf, under the heading of "Tuberculinskepsis," says: "Whoever enters upon the use of a remedy with mistrust is not in position to segregate the good from the bad and draw proper conclusions." In other words, start your course of tuberculin therapy which must extend over a period of from six months to a year, with a mind open to impressions, not with a mind made up for failure. Otherwise you will not have the proper perspective, nor see small blunders of technique, nor observe gradations of reactions, such as slight malaise, headaches, nausea, local reactions, etc., nor be able to patiently await a sometimes rather deferred improvement, and attribute failure to the method when indeed your own state of mind did not allow you to give it a fair chance or to observe it properly. Be open to conviction and do not scoff. For the tuberculin scoffers we have just this word,—quoting Goethe: "People scoff at things they don't understand." To discard a method after a trial is fair; to damn it without a trial shows absolute ignorance.

Certain tenets can be drawn up for the physician who believes in tuberculin therapy. A tuberculin triology which should be memorized by him is the following:—

1. Choose your case well.
2. Begin with small dosage.
3. Regulate exercise and rest carefully.

Let us briefly analyze this triology. Careful selection of a case requires sound judgment on the part of the physician. After all, what class of case is best adapted to tuberculin therapy? The fact that many incipient cases get well without tuberculin is no argument against its use. Beginning cases in good state of nourishment and without fever yield the best results with tuberculin; and in such cases, we can more quickly and safely get a tuberculin immunization. We cannot too often quote Trudeau who shows that 18 per cent. more of incipient cases treated with tuberculin are living than of those untreated. With improved technic and better understanding of tuberculin these figures will certainly be improved upon.

The burning question always before us is: Do we properly diagnose incipiency? Many abuses would cease if physicians would more carefully diagnose these cases. First we should be most careful in pronouncing a patient incipiently tuberculous where no tuberculosis exists. We must not diagnose merely upon gradations of breathing, or dulness, because very often a high pitched note or a roughened inspiration over one or other apex, especially right, does not prove tuberculosis. But gradations of respiration and dulness, especially increased bronchophony over an apex, a physical sign which unfortunately many to-day are putting into oblivion, together with a careful history of the case, examination of sputum, blood, urine and tuberculin tests, all combined and properly considered, should act as aids to a diagnosis of incipient tuberculosis. The worst blunders, however, are made in diagnosing incipiency where tuberculosis is present in moderately advanced form. In these cases error would often be avoided if *x*-ray examination were resorted to. If the *x*-ray has done anything at all in the past five years in the diagnosis of pulmonary tuberculosis, it has shown this: that many persons with supposed incipient tuberculosis of one or both apices have fairly well advanced or disseminated tuberculosis. A safe rule to follow for any but one expert in the use of tuberculin is, not to use it in cases running temperature. Such cases should be put to bed, and after thorough rest has caused a reduction of temperature, tuberculin may be slowly commenced. I have in a few stubborn fever cases seen improvement under minute doses of tuberculin, but this procedure should only be attempted when other means of reducing temperature have failed and when conditions demand quick action. Needless to state, a patient with hemoptysis should not receive tuberculin until all trace of bleeding has passed.

Should we give tuberculin to advanced cases? Again opinion is divided. Personally, I believe that only in a few well-selected cases

should tuberculin be administered where the tuberculosis is far advanced. Not that any harm can ensue, but that in most instances no result can be obtained. In advanced tuberculosis, the organism is most often in a passive state where it will not respond to any stimulus. The best one can hope for is a slight improvement, a slight prolongation of life. Therefore, it is better not to use tuberculin in such cases, unless it is made absolutely clear to all parties concerned that failure is to be expected and that success in these cases is uncommon.

One of the principal abuses in the administration of tuberculin lies in the dosage. We cannot begin with too small a dose. Many a physician becomes discouraged at the outset of a course of tuberculin treatments because he gets a rather severe reaction. This is often due to too large a beginning dose. Give a minute beginning dose and increase gradually,—the smaller the better. Personally, I begin with Bovine T. R., 0.00001 mgrm., increasing 0.1 c.cm., until ten doses are administered, giving three injections weekly. When ten doses have been given of this dilution, the strength is increased ten times and the same process repeated. When I am giving 0.01 mgrm., I increase my interval to twice weekly, later to once weekly, and later to bi-weekly. A course of tuberculin treatment should take at least six months to one year. If all goes smoothly, six months may suffice; if reactions occur, which should happen but very seldom if the case is carefully selected and the dosage increased slowly, more time is required. What should be our maximum dose? This is a matter of individual judgment, depending upon whether one aims to attain a state of tuberculin tolerance or tuberculin immunity. I believe that the former is all we should strive for, *i. e.*, to bring the patient's tolerance to that dose upon which he shows steady improvement and retain him on it for a long period of time. What the dose should be, depends upon the clinical and physical improvement of the patient. I seldom find it necessary to go beyond 1.0 mgrm. of Bovine T. R., and have often stopped at 0.1 mgrm. One should be thoroughly impressed with this fact: that no matter what tuberculin is used, the regulation of dosage is highly empirical and its increase and maximum dose dependent upon the physician's experience, judgment and ability to properly construe signs of improvement or retrogression in his patient.

Exercise and rest should be most assiduously regulated, and the patient thoroughly impressed with the danger of autoinoculation from overstrain. I firmly believe that tuberculin reactions often occur from not instructing the patient to take a great amount of rest daily, particularly after an injection. A plan I attempt to carry out, but which is not always feasible, is to have my patients, even though not suffering from any particular symptoms, remain in bed during the first two months of a course of tuberculin injections. This enforced rest increases general resistance and faciliates the desired tolerance for tuberculin. When the patient must be ambulant, his daily amount of exercise and rest should

be absolutely prescribed as well as his food, medicine and tuberculin. If this rule were followed, many a reaction would be avoided, many a patient would improve, many a life would be saved.

The last word upon tuberculin has not yet been spoken. It is still in a state of high empiricism, and he who uses it must approach his task with caution, with an understanding of the theories of immunity, with a knowledge of the fundamental truth governing the use of so potent a toxin, with a sound training in diagnosis, with trained experience and judgment, and above all, with a due consideration for the welfare of his patient. We are striving for a result. We want to stamp out civilization's greatest present day scourge. It matters little how this desideratum is obtained, whether through climate, hygiene, food, air and rest, without tuberculin or with it. Up to the present it has not been accomplished without tuberculin; therefore we must add the latter to our armamentarium. But tuberculin will not cure alone; if it did, it would be the true specific for which humanity is so loudly clamoring. Its use includes proper surroundings, housing and food. No remedy can be of avail with a poor *milieu,* without alterations of bad living and without special care. I am on the side of those who believe that tuberculin, properly used, has aided and hastened many a cure; that in many instances is has effected improvements, arrests or cures which would not have been attained without it. It must be placed in the hands of the general practitioner for tuberculosis in a general disease; but his hands must be trained,—he must learn its use and avoid its abuse. Only in this way will it ever be proven whether tuberculin is to become the boon to mankind which Koch so nobly in his lifetime strove to make it.

162 Post Street.

REPORT AND ANALYSIS OF A GOITRE WITH MARKED INTRATHORACIC EXTENSION.

By Norvelle Wallace Sharpe, M. D., of St. Louis.

Among goitres of various sizes, configurations and mass topography, large intrathoracic growths easily rank among the rarest and most interesting. Consideration of such tumors has definite value to the anatomist, pathologist, clinician and surgeon.

The literature is not rich in reports of such cases, and a tabulation of the results of an exhaustive search would seem to be profitless, for the details of recorded cases are noteworthy neither from the standpoint of amplitude nor exactitude. A sufficiently fair conception of the more recent English and German thought, for the purpose of this report, is probably to be found in Bland-Sutton's "Tumours Innocent and Malignant," 1907; and in Ewald's "Schilddruese, Myxodem und Kretinismus," 1909. Bland-Sutton (q. v.) discusses the two forms of adenoma found in the thyroid, and the complications that are encountered. Reverdin (Goitre Kystique Uniloculaire Enorme, Extirpation totale. Guerison. *Revue Med. de la Suisse romande,* Vol. XIII., 185, 1883), records a case, man, aged sixty-two, cystic adenoma of thyroid, 60 cm. in circumference, punctured. Bruns (Cystenkropf von ungewœhnlicher Grœsse geheilt durch Extirpation, *Beitraege zur klin. chir.,* Vol. VII., p. 650, 1891), removed a cystic goitre from a woman, aged fifty-eight, which had extended so low as the umbilicus, and which, from its weight, had produced a cervical lordosis and a thoracic kyphosis. So heavy was it that she was accustomed to rest it upon a table, when seated. It was successfully enucleated. Sutton states that if the goitre reaches so low as the thoracic inlet, it becomes squeezed between the manubrium of the sternum and the trachea. This impaction induces urgent symptoms of dyspnea. He alludes to a man of thirty-six, found lying in the street near Middlesex Hospital, apparently in a fit. When brought to the casualty room, he was found to be dead. At autopsy a tumor connected with the cervical section of the trachea was found. This proved to be an enlarged accessory thyroid gland, embedded in a thick fibrous capsule, whose inner segment was firmly fixed to the trachea,—between the fourth and ninth semi-rings. The tumor was somewhat larger that a dove's egg, but had severely compressed the trachea. Ewald (q. v.), after discussing sundry developmental details of goitres, suggests that if they extend in the direction of *incisura sterni* and penetrate behind the sternum, the so-called "substernal goitre" is formed, which with deep inspiration may descend into

the anterior mediastinum and disappear entirely, or nearly so; and with expiration may reappear at the level of the hyoid. This has been observed, long since, by Fodéré, and called by him, *goitre en dedans,* or *goitre plongeant.* The goitre, however, may become separated or bound down within the depths of the mediastinum; it then usually lies behind the sterno-clavicular junction and first rib, and may occasion the severest signs of compression, and considerable diagnostic difficulties, especially if the sac juts still more deeply into the mediastinum, into the supra-clavicular space, or even into the pleural cavity. Thus Virchow reports that a multilocular cystic tumor, larger than a fist, was brought to him as having been found in the pleural sac of a patient. Diagnosis was not made until microscopic examination of wall of cyst revealed that in it were enclosed multitudes of compressed thyroid follicles. Adelmann has noted the left lobe elongated in front of the vessels and nerves, and extending behind the clavicle and first rib into the thoracic cavity, where it pushed back the left lung to a considerable degree,—from there reaching over to the arch of the aorta. Woelfler states that that form of goitre, which on account of an abnormal mobility of the larynx and trachea, will be found at times retrosternal, at other times will rise to its usual site. Thus that excursion, which in the case of *goitre plongeant* occurs rhythmically (with respiration), is displayed in the case of a floating goitre only at certain times and is quite independent of respiratory movements. The descent of the goitre and its mobility is also, in part, made possible by the fact that the goitre occasionally is suspended from a pedicle. This is derived from the original point of thyroid attachment, forms a connective tissue cord, and is provided with vessels and nerves. Such cords, probably caused by the pull of the tumor, are commonly encountered with large goitres; though Woelfler has noted them among the small fibrous group.

The case hereinafter detailed is placed on record on account of both rarity and interest. Owing to its immobility it obviously will not fall under the sometime classification of Fodéré, *goitre plongeant;* nor does it conform to the description of Woelfler, as noted above. This bilobed goitre, without isthmus, whose lobes were conjoined merely by velamentous connective tissue, was markedly asymmetrical; thus differing, radically, from the dogmatic, but wholly groundless, postulate, of Bland-Sutton:—"When both lobes contain an adenoma, the gland will maintain its normal shape; when one lobe only is involved, the gland becomes unsymmetrical." The case detailed by Adelmann, most nearly parallels the one which forms the subject of this report. Prof. R. L. Thompson (Pathologist to the Medical Department, St. Louis University), assures me that, structurally, the mass conforms to the conventional adenomatous type as observed in the thyroid. No cysts were noted; nor were the parathyroids discovered. Report is as follows:—

In the routine dissection work of the Anatomical Department, St.

Louis University, Session 1909-1910, certain interesting, but minor peculiarities were discovered in the neck of a male cadaver. The cause was found, when the deeper structures were invaded, to consist in a moderately large, bilobed, centrally implanted, goitre. At this stage of the dissection but mild interest had been stimulated, owing to the fact that neither in size, location, nor configuration did the goitre present anything of special note; though both lobes, in particular the left, extended well below the sterno-clavicular arch. In order not unduly to

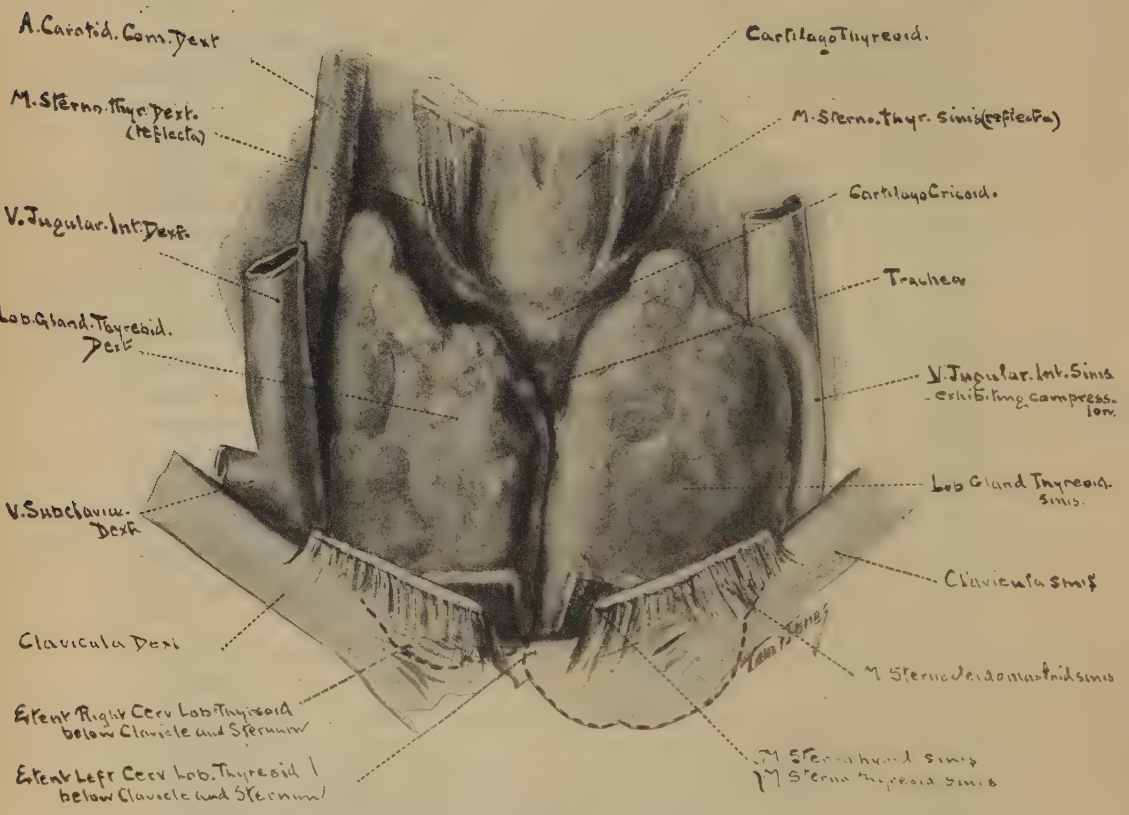
A. Carotid. Com. Dext
M. Sterno. Thyr. Dext. (reflecta)
V. Jugular. Int. Dext.
Lob. Gland. Thyreoid. Dext
V. Subclavia. Dext
Clavicula Dext
Extent Right Cerv Lob. Thyreoid below Clavicle and Sternum
Extent Left Cerv Lob. Thyreoid below Clavicle and Sternum
Cartilago Thyreoid.
M. Sterno. Thyr. Sinis (reflecta)
Cartilago Cricoid.
Trachea
V. Jugular. Int. Sinis exhibiting compression.
Lob Gland Thyreoid Sinis.
Clavicula Sinis
M Sterno Cleido mastoid Sinis

Plate I. Showing cervical portion of lobes of Thyroid, and their extent beneath Clavicles and Sternum.

Note absence of isthmus;—with definite dissociation of Lobes. (4/9 life size.)

disturb structural relations, further orientation was suspended. Later, as dissection proceded, the above-noted facts were confirmed; the left lobe terminated where palpation had outlined it, but the right lobe, which had been thought to be the smaller, yet to conform fairly in both size and contour to the left lobe (conf. Plate I., broken line periphery), was now found to be in apposition (or in continuation) to a solid centrad mass. It was thought, by some of my colleagues, that this was the superior vena

cava, well loaded with blood; nor was it to be denied that their opinion was based on highly suggestive evidence. But further study and exploration confirmed the belief that the inferior periphery of right lobe (shown by broken line in Plate I.), did not mark the actual extent of the growth, but that extending centrad, dorsad and dextrad, and beautifully conforming to its osseous environment, it terminated at the root of the right lung.

Plate I. (cervical portion of goitre), Plate II. (right lateral view of goitre), and Plate III. (gutters left, after complete removal of goitre), quite felicitously display the structural relations encountered at different stages of the dissection.

As suggested, such a mass presents interesting material for anatomist, pathologist, clinician and surgeon. The subjoined data will, in general, conform to this sequence.

TABLE I.

A brief detail of the more important structures, and the more significant distortions which were observed. (See Footnotes 1 and 2, page 319.)

1.	Gl. Thyroid. I., II.	Ordinarily should not extend below Vert. I. Thoracic;—is found to extend on right side so low as Vert. V. Thoracic, and bifurcation of Trachea. Posteriorly it rests upon the vertebræ and angles of ribs.	
2.	Trachea. I., III.	Bifurcates at level Vert. V. Thoracic. Throughout its course it shows an average deviation to the left of 1 cm. From Vert. VII. Cervic to Vert. III. Thoracic it is markedly compressed; an excellent example of *Saebelscheide*, of the Germans.	
3.	Gutters. III.	Left after removal of Goitre, are sufficiently oriented in Plate III.	
4.	Aorta. III.	Both cephalad border and right laterad face normal.	
		DEXT.	SINIS.
5.	Fasc. Pretracheal.	Ventrad to tumor.	Dorsad to tumor.
6.	Pulmon. II., III.	Root, Normal. Vert V. Thoracic. Apex. depressed to neck Costa. I.	Root. Normal. Vert. V. Thoracic. Apex. Normal.
7.	A. Anonyma. II., III.	At its origin from aorta should be found in right hemisection, Crosses the Trachea at level	but has been displaced 1 cm. to left of midline. of upper border of sternum.
8.	A. Subclavia Dext. II.	ractically normal.	
9.	A. Subclavia Sinis. III.		Moderate dorsad bowing.
10.	A. Carotid Com. Dext. I., II., III.	At normal level of Gl. Thyreoid lies dorsolaterad to Goitre; but lower, (the Goitre hugging the vertebræ) it tends ventrad and crosses it at level of superior margin Costa I.	
11.	A. Carotid. Com. Sinis. III.		Exhibits marked dorsolaterad displacement, quite concealed by left section of tumor. Conf. 1.)

		DEXT.	SINIS.
12.	V. Jugular Int. Dext. I., II., III.	Normal throughout; save that it exhibits displacement resulting from laterad thrust of tumor. Junction with V. Subclavia Dext. normal, but shows similar displacement. In lower portion of its course it accompanies A. Carotid Com. Dext. (q. v.) in its ventrad bridging of tumor.	
13.	V. Jugular. Int. Sinis, I. III.		Exhibits marked dorso-displacement as A. Carotid. Com. Sinis. (q. v.) Only partially concealed by tumor.
14.	V. Subclavia Dext. I., II.	Practically normal.	
15.	V. Subclavia Sinis.		Exhibits dorsad bowing similar to A. Subclavia. Sinis. (q. v.)
16.	V. Anonyma Dext. II.	Laterad to right edge of Sternum; moderate caudad displacement.	
17.	V. Anonyma Sinis. II., III.	Junction of V. Anonymæ occ	Moderate caudad displacement. urs in right first interspace.
18.	V. Cava. Sup. II. III.	Conf. V. Anonymæ, 16 and 17.	
19.	V. Azygos. Major. II.	Caudad displacement of arch.	
20.	N. Phrenic. Dext. II.	Lies laterad to N. Vagus. Dext.; crosses ventrad face of tumor.	
21.	N. Phrenic. Sinis.		Normal, save pushed laterad by tumor.
22.	N. Laryng. Inf. Dext. II.	Held within Gl. Thyreoid capsule. Given off from N. Vagus Dext. at approximately, the junction of middle and lower thirds of tumor. Tumor has caught in its loop and driven it caudad, under strong tension, fully 8 cm. below normal. Curving around caudad face, it ascends on dorsad face, for customary distribution.	
23.	N. Laryng. Inf. Sinis.		Moderate dorsad displacement; otherwise normal.
24.	N. Vagus Dext. II.	Courses over ventrad face of tumor:—outside of capsule:—displaced laterad; —under strong tension.	
25.	N. Vagus. Sinis.		Normal save exhibiting moderate dorsad displacement.

Footnote 2 (q. v.) directs attention to the interesting gutter which exists in the right lobe of the goitre. This gutter was filled with vessels and nerves, as portrayed in Plate II., and bounded ventrad by the proximal segment of the right clavicle, sternal segment of the first rib and its chondral extension, and the right lateral segment of the manubrium. Though this condition,—the guttering of solid masses by soft structures,—is quite common elsewhere (the well-known ability of the rectum to maintain a fairly satisfactory canal when encroached upon by a uterine fibromyoma that drives it against the sacrum will serve as an instance), yet the belief is ventured that so exquisite a canal in a goitre, (without doubt elaborated by the vessels), will not frequently be noted. The dorsad face of this portion of the growth closely hugs the posterior wall of the inlet to the thorax, maintaining not only apposition with vertebra and rib, but preserving for a space (varying in width from 2 to 6 cm.) an almost exact parallel with the ventrad face. Within this gutter neither vessels nor nerves showed any macroscopic evidence of compression.

While to the trained anatomist or surgeon, Plates I. and II. will probably afford the greater interest;—for those whose appetite is rather for the bizarre, Plate III. is to be commended. Mr. Jones was requested to make this sketch for the specific purpose of giving, at one glance, the extent of territory occupied by the goitre, and the effect of its peripheral thrust upon contiguous structures. Allusion already has been made to the striking example of *saebelscheide*. Plate III. shows, in addition, very accurately, the effect of compression upon the left common carotid and left internal jugular. It was a fortunate fact (for this patient) that these structures were not held against a rigid background (as seen in the retroclavicular gutter of the right lobe). For not only their own elasticity but the mobility of the cervical musculature, acting in harmony, probably prevented a pressure stasis, that however interesting it might prove from a pathologist's viewpoint, would hardly be anticipated to have met with the patient's unqualified endorsement. With these facts at hand we are led to the conclusion that the carotid and jugular, during life, were able to functionate with reasonable adequacy. In this conclusion we are strengthened by the absence of any gross evidence of tubular dilatation resulting from pressure in continuity. That Plate III. is able

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Footnote 1. Roman numerals, following the various sub-heads, designate the Plates in which the notation may be studied.

Footnote 2. The broken lines of Plate I. indicate the caudad termination of the left cervical lobe; on the right, however, the right cervical lobe does not actually terminate with the broken line, for with an abrupt recession it tends posteriorly to promptly re-expand into the right intrathoracic lobe. It must be understood that these are two arbitrarily designated lobes, for the *right lobe is one continuous mass.* The broken lines of Plate II. indicate the outline of the mass hidden by the intervening structures; include the junction between the arbitrarily designated cervical and intrathoracic lobes:—include also the remarkable gutter within which nest the bridging vessels and nerves.

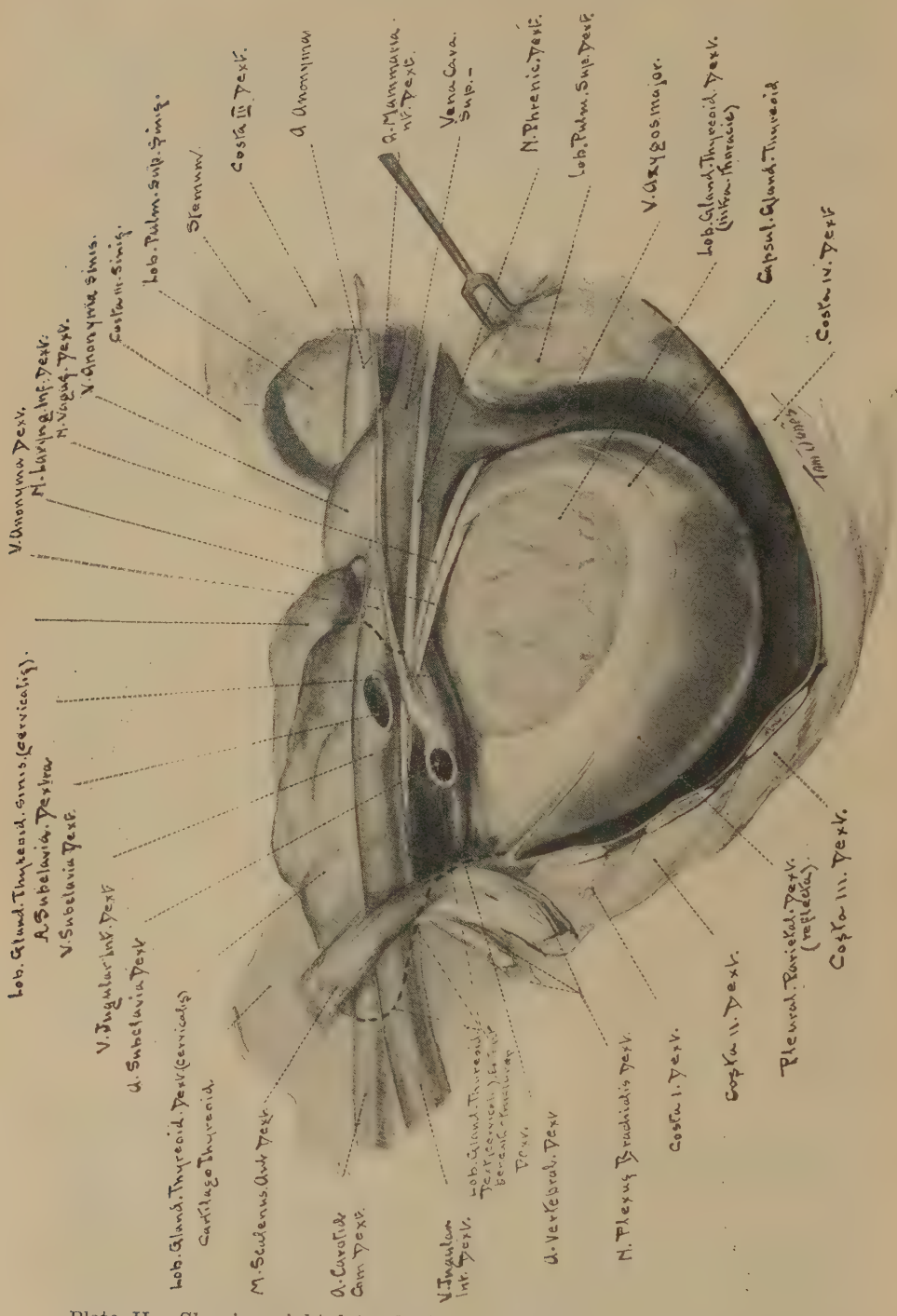

Plate II. Showing right lateral view of Thyroid. (Clavicles, upper Ribs, Manubrium and portion of Gladiolus removed.) Note position, course and tension of N. Laryng. Inf. and N. Vagus;—also depressed and compressed arch of V. Azygos Major. (4/9 life size.)

to portray pressure areas on carotid and jugular, is rather to be explained by the excellent system of preservation of material, in vogue in the Anatomical Department, which has caught and maintained these vessels

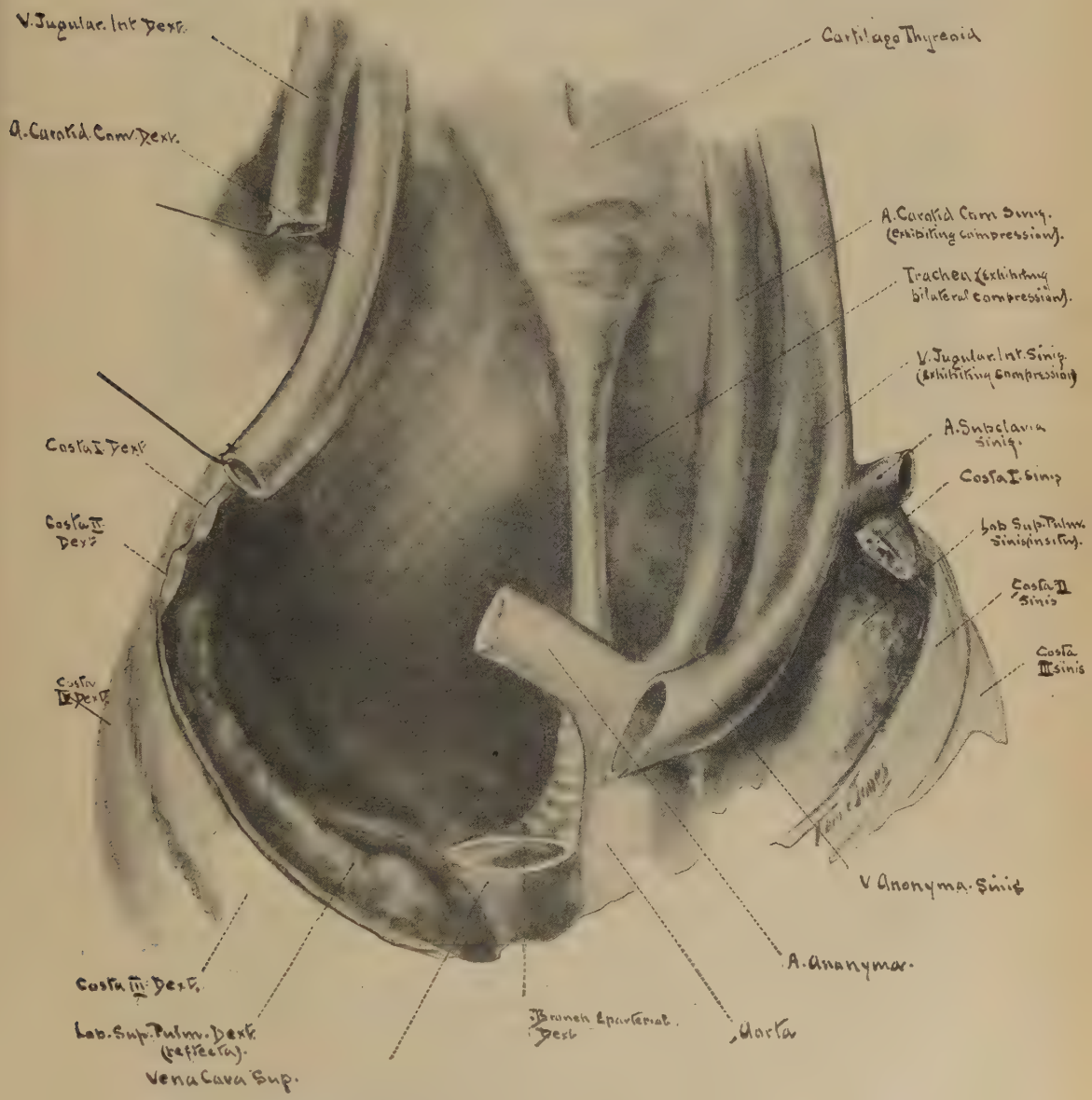

Plate III. Showing enormous gutters left after complete removal of Thyroid. Note left A. Carotid and V. Jugular deformation and malposition; also extreme type bilateral compression at Trachea; also position superior lobe of right Lung, showing effect of the combined caudal and ectad thrust of the right intrathoracic portion of Thyroid. (4/9 life size.)

in this abnormal pose:—the significance would, therefore, be post-mortem rather than ante-mortem.

Attention is directed to protocol 22 of Table I., which deals with the right recurrent laryngeal nerve. The record is there made that owing to the intrathoracic lobe having caught within the loop of the nerve and driven it caudad:—the nerve loop has been carried fully 8 cm. below its normal course. A study of Plate II., will show that this statement by no means affords a fair conception of the actual elongation of the nerve itself, for it merely measures how far the loop has been carried. *The actual elongation of the nerve was a trifle in excess of 25 cm.* Protocol 22 shows that the recurrent laryngeal was held *within* the capsule of the goitre, while protocol 24 shows that the right vagus courses *outside* of the capsule. Both nerves were under tension, but the tension of the recurrent laryngeal was greatly in excess of that of the vagus. It would seem to be highly probable that during the growth of the intrathoracic lobe, which doubtless maintained a fairly constant, possibly increasing, tension upon the nerve loop;—that the nerve gradually cut its way through the capsule, not ceasing until checked by the resistant tissues of the adenoma proper.

As the tumor differed in no essential from the conventional thyroid adenomata (so reported by Prof. Thompson), I am unable to submit any microscopic data of interest. The pathologist, alike with the clinician, will find attractive browsing in studying the changes wrought by mass pressure; in particular the evidence offered by the left common carotid, left internal jugular, the trachea, the right vagus, the right recurrent laryngeal and the azygos major. At this point it may be recorded that the blood supply of the growth was significant, neither from the viewpoint of number of vessels, nor size of vessels. In fact, it was rather to be noted that vessels were unexpectedly small, and numerically below what might have been anticipated. No isthmus was found (conf. legend under Plate I.).

The clinician would fain know what was the picture exhibited during life, and would speculate regarding the direct and more remote subjective and objective changes that would be found. His prime eagerness would probably center in the question of diagnosis. Unfortunately, I am able to tender but few details. Yet something may be laid before him. By rare good fortune, I have been able to trace this cadaver and to secure a copy, in detail, of this man's record, while a patient in the hospital. It would hardly seem necessary to give this record in full; the following extract must suffice:—

"Natra Kaukasa, native of Turkey, single, male, entered hospital Nov. 28th, 1909, died Dec. 12th, 1909. The provisional diagnosis under which he entered, was "general debility and bronchopneumonia." He was conscious, not seriously ill, and complained only of weakness. Stated that he was thirty-eight years old, but is probably twice that age. Does not

seem to understand questions very well. Under "physical examination": Percussion and palpation negative, auscultation revealed increased breath sounds and a few scattered indistinct râles. Heart rapid and irregular, no murmurs, arteries hardened. (Chart shows that pulse ranged from 88 to 136, respiration 22 to 40, latter just preceding exitus.) The ultimate diagnosis was 'gastric carcinoma (?) and pyelitis.'"

Only the more salient memoranda have been included in this abstract. The interesting fact is that not only was the goitre not found, but the most critical study of this record shows that it was not even suspected. It would be unfair to assume that the examinations to which this patient was subjected, were wholly incompetent and lacking in reasonable fidelity. Owing to the system followed at this hospital, it may be safely maintained that the patients receive a carefulness of medical supervision considerably in excess of the vast majority of patients in private practice. I am able to offer a bit of personal testimony:—In the dissection of this head and back, definite annoyance was occasioned the students by an inexplicable rigidity of the neck. Various suggestions were made,—one of which I happen to recall,—that the formol solution employed within the cranium, had, by some means, escaped, and penetrating the cervical muscles, had stiffened them. Retrospectively speaking, this rigidity may be wholly assigned to the tumor masses firmly blocking the thoracic inlet. In spite of the fact that I was endeavoring to solve the problem of the aforesaid rigidity, and in spite of the additional fact that I was in a receptive mood for the discovery of conditions of surgical and anatomical interest, the existence of the goitre was wholly unsuspected by myself. I make this confession, with no inconsiderable regret, but I venture to offer the following, partly in extenuation. The cervical topography was, for all practical purposes, the topography of a normal neck. I am unwilling to state that cervical and supraclavicular mensuration were absolutely normal or absolutely symmetrical; but I positively affirm that notwithstanding the large growth that was present, so insignificant were the surface changes that the faintest suspicion of the actual condition was not occasioned.

While, on the other hand, it is almost incredible that *in vivo* such a mass with such definite anatomical distortions could escape the scrutiny of a master in diagnosis; that he would fail to suspect the tracheal compression; fail to find evidence sequent to the vagus, and especially the recurrent laryngeal tension; fail to discover the presence of the mass itself; yet the evidence is at hand that this goitre slipped through the diagnostic net of the staff of the aforesaid hospital. This fact is emphasized, and the comparison drawn, not to censure the staff, but to direct thoughtful consideration to the far more important fact that this great tumor actually did escape detection.*

*In this connection, the following extracts, taken verbatim from a recent paper entitled, "Cretinism, Juvenile and Adult Myxoedema;—Exophthalmic and Simple Goitre.—The importance of Making an Early Dif-

The question that confronts the surgeon is essentially a practical one. What surgical attack may be employed for removal of such a tumor? Or if removal be considered impossible: what alleviative measures may be instituted?

After study of this material the conclusion has been reached that relief could be attained with a fair measure of certainty; and that complete removal is, technically, not impossible.

For anatomical reasons, the hypothetic attack is divided into three steps:—

I. Isolation and removal of left cervical lobe.
II. Isolation and removal of right cervical lobe.
III. Removal of right intrathoric lobe.

It is obvious that Step I. would be comparatively simple. The gain that would accrue (even though nothing else was attempted), would be relief of pressure on the left common carotid and internal jugular; but more particularly, the lifting of at least 50 per cent. of the pressure on the trachea.

Step II. would prove but slightly more difficult than Step I. (provided no effort was made to accomplish Step III.). The pedicle which would be left would consist of the retroclavicular portion of the growth. Careful study of the structures lends confirmation to the belief that bleeding could be controlled, and the so-called "pedicle" competently covered in with its own capsule. Even if no more was accomplished than Steps I. and II., we would attain almost complete relief of pressure in all supraclavicular and suprasternal structures. This, of itself, would be such an excellent accomplishment that one might well be justified if he refused to attempt the final stage.

Step III. is conceded to be difficult, but the claim is made (based largely on dissection), that it is not impossible. While it is admitted that from

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ferential Diagnosis.—Of Equal Interest to the Physician and Surgeon and Other Specialists.—Treatment," which seems to have been read before both an Academy of Medicine and a Medical Society; and published in one of our reputable medical journals and reprinted in another,—should prove not wholly devoid of interest.

"*There is no difficulty in diagnosing the grosser and typical forms of any of them;* so I will not especially dwell on them. It is very important, indeed, to the victims of these diseases that they be recognized early," etc., etc.

"*The differential diagnosis in the diseases of the thyroid from each other and from other diseases which they may resemble, is not difficult* in 'good illustrated' and typical cases. The milder forms are more difficult to diagnose," etc., etc. (Italics by the author.)

Unless we are willing to admit that these statements are merely a tintinnabulating collocation of words, in harmony with much of the glittering generalizations that are gravely presented before many of our Societies and recorded in our Journals;—we are forced to believe that, in the mind of the author, the question of differential diagnosis, in these somewhat allied conditions, is felicitously easy. Nor are we able to gainsay the lurking suspicion that this amusingly dogmatic pronouncement is not far removed from the actual *credo* of the faculty at large. And yet such cases as the one herewith recorded, may well serve to remind us that the diagnostic path is by no means invariably rose-strewn.

the standpoint of mere technical brilliancy, it would be a genuine surgical triumph to remove the right intrathoracic lobe *en masse*: yet true conservatism would direct that fragmentary excochleation be given the preference. The technique would be somewhat as follows:—Sever the claviculo-sternal junction; draw clavicle outward; release the first and second ribs (if additional room be found imperative cut clavicle and ribs, from within out, by means of a Gigli saw, leaving an external periosteal attachment, and thus developing an hinged flap); the bridging vessels and nerves should be retracted upward and inward; and the mass, controlled by tenacula and traction sutures through the substantial capsule, should be removed piecemeal.

There are three important factors that would make possible this technique:—

1. The scanty blood supply.
2. The blood vessels and nerves have been stretched and otherwise. rendered plastic by the long-continued thrust of the tumor; and thus are far less resistant to manipulation than normal structures in conventional relations.
3. Owing to the intrathoracic lobe having pushed down the parietal pleura before it, Step III. should be accomplished extra-pleurally.*

*I desire to acknowledge my indebtedness to Prof. Albert C. Eycleshymer for his courteous permission to employ this material as the basis of this analysis; and to express my appreciation of the valuable coöperation of Assistant Prof. Daniel M. Schoemaker in checking my findings.

SALVARSAN IN THREE REBELLIOUS CASES OF SYPHILIS.

By Estill D. Holland, M. D., of Hot Springs, Arkansas.

After having read a great deal on the subject of salvarsan, in the treatment of syphilis, it seems to me that a great mass of what has been written comes from sources that are more or less prejudiced, either for or against this drug, and is therefore very confusing. Those who believe in salvarsan, believe it does wonders and try to prove it, while those who are sceptical go to the other extreme by picking all manner of faults and exaggerating them.

Suppose that for any cause the complications arising from the treatment of syphilis with mercury had been given as wide publicity as those after the use of salvarsan. How often do we see patients in the late secondaries and all the degrees of tertiary syphilis, who have been supposedly cured by mercury in the past. However, we have seen so many of these that they have occasioned us no surprise. If, on the other hand, we find a patient developing eye or kidney symptoms after the administration of salvarsan, we are sure to notice it and very likely to publish it as a warning to the profession against this drug. Salvarsan is a powerful drug and a poison, so we should expect a great many bad results from it in the hands of the careless or inefficient doctor. The very knowledge of the toxic possibilities of "606" will, I believe, make it a safer drug than mercury, which is so indiscriminately given by the same class of doctors and sometimes with such dire results.

As to a cure, I do not think anyone can prove it an absolute cure any more than they can prove that mercury is. The proof of the cure now depends upon the lack of manifestations of syphilis for the rest of the patient's life. The Wassermann and Noguchi reactions are now helping us a great deal and no doubt will continue to improve until they are reliable in all cases under certain conditions.

We now know that salvarsan will remove the symptoms and manifestations of syphilis in a much shorter time than mercury will. We know that it will give a negative Wassermann much sooner than mercury, and we also know that there is often a relapse, which nearly always occurs with mercury unless it is continued over a long period.

We have had ample time to find out the weak points in the old treatment of syphilis, and we shall no doubt find a great many in the new with possibly the ultimate combination of the two methods. But no matter if the effect is not a lasting one. Salvarsan has proved its usefulness in those resisting and destructive cases of syphilis, which will not respond

soon enough to mercury to prevent the destruction of tissue and disfigurement, and it is worth all we can say in its favor for this alone.

None of the following cases is given as cured, as they have all been too recent to tell anything about that, but they do show marked immediate improvement. These cases are three of the worst I could find and had been on mercury and iodide in all forms before and after coming to Hot Springs.

They had all failed to respond to any treatment and all were getting constantly worse.

CASE I.—Mr. P—, aged twenty-eight years. In March, 1909, had chancre on penis, which was allowed to persist without treatment, and was followed by the secondary stages.

Arrived in Hot Springs in October of the same year with tertiary syphilis. Nearly all his hair was gone, had several ulcers on his scalp, ulcers the size of a twenty-five-cent-piece over his arms and legs, some of which were very deep. We treated him with hypodermics of mercury and by inunctions, and, by keeping him at the point of salivation, we could prevent the disease from progressing. However, he was in great pain from the ulcers and it was impossible to keep him constantly on such heroic doses. My service at the St. Joseph's Infirmary ended January 1st, 1910, and I lost track of him until January, 1911, when I again went on duty in the free ward. I found Mr. P— in a very much worse condition than when I had first seen him. His body was covered with pigmented spots from old lesions, and there were about twenty active ulcers on different parts of his body. The right upper eye-lid had been eaten off and scarred until it was impossible for him to close the eye. The sclerotic was red and the eye very weak and watery from constant strain. He was still in great pain and had been in the hospital for most of the time for fifteen months. Examination, having shown that his eyes were normal, and finding no contraindications in the urine, heart, or blood, I gave him at noon on January 4th, 0.5 grm. of the neutral solution intramuscularly. He had been having some fever right along, temperature on January 3rd being 99° F.

There was no elevation of temperature following. At 9 p. m., on the 5th, temperature was 100.2° F., pulse 96. January 6th, 6 p. m., temperature 99.5° F. On the 7th it dropped to 98.8° F., on the 8th reached 99° F., and on the 9th returned to normal, and has remained so. The patient complained of some pain on the evening of the 4th, which lasted about six hours, followed by a numb sensation that lasted until the 10th, after which there was no unusual sensation of any kind except a little pain on deep pressure.

Pain stopped in all lesions within twenty-four hours. On the second night, the patient slept, without the aid of analgesics, for the first time in several months. All lesions began to take on a better appearance by January 10th, some of the lesser scabs already falling off. Patient left the hospital on January 16th, and went to work feeling fine and strong. January 22nd the last scab fell off and there is no mark of the sores except the scars which are healthy. Patient has had no mercury, iodides or local treatment of any kind since taking "606."

CASE II.—Mr. J—, aged thirty-seven years. Had chancre on the penis in 1903, followed by secondaries in the usual way. Pain started in nose four years ago and patient came to Hot Springs and commenced treatment. Soon after arriving here his eyes became weak and patient found it necessary to wear glasses. The nose became worse and glasses had to be changed several times. I saw the patient a number of times during 1910, but he finally grew so weak

that it became necessary for him to seek aid at the hospital. When I took charge of him in the ward January 1st, 1911, the bridge of nose had entirely broken down, besides which there was an infection and breaking down of the left antrum. His face was so swollen that he could not open his eye, and the odor from the discharging antrum kept him nauseated. He had taken mercury in every form in the last few years, and had constantly gotten worse.

Blood examination demonstrated malaria, but other findings being about normal, I gave him "606," 0.5 grm., at noon on January 9th, his temperature at that time being 99° F. On the following day, the temperature reached 99.8° F., and the patient complained of a dizzy sensation, but no pain to amount to anything. Pain was not severe enough to require the administration of an anodyne, and patient had a good night's sleep. January 11th, temperature reached 101.2° F., with some complaint of chilly sensation, but no pain in nose or cheek, and discharge from antrum about stopped. January 12th, temperature 100° F. Patient had a good night and awoke with very little pain at the site of injection. January 13th, temperature 100.2° F. All symptoms much improved and no plasmodia to be found after careful microscopical search. January 14th, temperature 100° F., and feeling better. January 15th, temperature 99° F., and all symptoms better, there being no pain from any of the lesions. January 16th, patient left the hospital and went to work for the first time in several months. A peculiarity of this case is that he has taken off his glasses and says he does not need them. An oculist, who examined his eyes, reports them much improved in accommodation. The inflammation stopped January 12th, and he is working steadily. This patient's memory was affected so that it required several minutes for him to think of his name. He also had dizziness and slight ataxia. All this has stopped.

Case III.—Mr. B—, aged twenty-one years. Had chancre of the penis August 20th, 1909, followed by the usual secondaries, the initial lesion persisting. Came to Hot Springs in October and received the regular treatment, but there being no response, was given hypodermics of mercury, also soamin, still with no results. I first saw him January 11th, 1911, at which time he had three large, deep ulcers on the glans penis, it being necessary to split the foreskin to permit dressing. He had a fresh mucous patch on upper lip the size of a ten-cent-piece and the throat was so sore he could hardly swallow.

Finding no contraindications, I gave him on January 10th, at noon, 0.6 grm. salvarsan, his temperature at that hour being normal. At 6 p. m., the same day, temperature reached 100° F., falling to 99.8° F. at 9 p. m. On the following day the temperature reached 101.2° F., pulse 90. The patient had a good deal of pain during the afternoon and evening following injection, but did not have to take anything for it. January 12th, temperature 99.7° F., pulse 84. January 13th, temperature 99° F., pulse 88.

By this time all lesions were looking and feeling better and patient was able to eat without any inconvenience in swallowing. January 14th, patient was feeling a great deal better and the temperature was normal. Patient left the hospital January 16th, with all lesions on penis healed and only one mucous patch remaining. By January 22nd there was no sign of an active sore, and all scars were appearing healthy. The patient took a job shoveling coal for one of the large hotels and gained rapidly in strength and vigor.

A peculiar point in regard to this case is that I allowed the patient to smoke as many cigarettes as he wished, the mucous patches healing in spite of it.

I have given salvarsan to several other cases in the last few days, none of which was nearly so bad as any of the previous cases and all are doing wonderfully well. None of the patients had enough pain to amount

to anything, one patient leaving the hospital the day following injection, another on the third day.

I try to keep them in bed for five days, but, unless they feel some soreness, it is hard to do. I used the neutral solution of salvarsan in 10 c.c. of water and have given it in all cases in the gluteal muscle of one side.

It seems to me that these cases justify the use of salvarsan, at least under certain conditions. These are the first three patients to whom I administered it in the hospital and none of them possessed any peculiarities, except that it would be difficult to get hold of three such cases at one time anywhere but in Hot Springs.

PRIMARY CARCINOMA OF THE APPENDIX VERMIFORMIS.

By Max W. Myer, M. D., of St. Louis.

One cannot hope in a consideration of primary carcinoma of the appendix to present anything new. So little is known, however, of the real frequency of the condition, that it behooves us to report all cases, so that some true data may be compiled. The frequency is variously estimated from ⅓ to 3 per cent. In 1900 Hurdon was able to collect only 10 cases from the literature, while in 1903 Elting had collected 24. Baldauf in 1905 found 37 authentic cases, and the recent literature contains 105 cases, reviewed by McWilliams. This rapid increase must be explained in two ways—namely, the great increase in the number of cases of appendicitis operated during this decade, and the more frequent microscopic examinations of the appendices removed. The gross neglect of the latter continues to be the cause of our incomplete statistics.

The case to be reported is Miss C., aged twenty years. She had an attack of typhoid fever three years ago since which time she has suffered with cramps in the lower abdomen and severe constipation. In the past three months these cramps have been very severe and of longer duration. Has a feeling of fullness in the epigastrium after meals, with eructation of gas. Has never had an attack so severe as to confine her to bed or to cause nausea and vomiting.

Physical examination negative, except for an exquisitively sensitive area in the right iliac region. Meltzer's sign is positive. Stomach analysis reveals an absence of hydrochloric acid.

Diagnosis.—Chronic appendicitis.

Operation, August 24th, 1909.—Appendix fixed by light adhesions, removal simple, normal convalescence.

Description of Appendix.—Appendix is about three inches in length, with stiff and thickened walls,—a typical fibrous appendix. Its tip is bulbous and hard, apparently due to a new tissue-formation. The lumen of the appendix is patent, with a slightly congested mucous membrane. At the tip is a yellowish circumscribed growth, about the size of a pea. The mucous membrane at this point seems to pass directly into the small tumor.

Microscopic Examination.—The growth is composed of nests of spheroidal cells, with a well-developed stroma and rich blood-supply. The mucous membrane is in great part destroyed in this area by the growth, showing in only several places normal glands. The submucosa is likewise freely invaded by the growth, but at no point does it invade the

muscularis. Slight round-cell infiltration in the superficial surface of the growth.

The appendix should offer a rich field for the study of the early development of carcinoma and in this regard differs from the remainder of the gastro-intestinal tract, where the growths are slow in developing and rarely recognized until very late. As far as all observations have led up to the present time, carcinoma of the appendix is also very slow in its development, and it is to be regarded as comparatively benign. This latter cannot be explained upon the grounds of any great difference in the cytological structure of the growth, but is, I think, to be accounted for upon clinical lines. Fortunately most appendices whose walls are harboring the developing cells of a carcinoma, have either been previously involved in a pathological process,—which makes the diagnosis of appendicitis possible,—or the developing growth will itself possibly produce such symptoms. Several cases have been reported, however, of well-developed carcinoma found at autopsy, without any previous history of symptoms.

With the diagnosis of appendicitis, usually follows the removal of the appendix and consequently the early removal of what would in other organs be permitted to develop until it became a far-advanced growth, with its late symptoms.

We are accustomed to regard carcinoma in the young, as a far more serious condition than in the old, on account of the rapid development and early production of metastases, due to a very active lymphatic system. The appendix here, too, offers the exception. The average age for the development of these growths has been reckoned at twenty-eight to thirty. The youngest case being reported in an eight-year-old child. The explanation of this, too, seems to be clinical rather than pathological. It is not improbable that carcinoma advanced to that stage at which we are accustomed to find those of the appendix, could be found at a corresponding age in many organs, could routine examinations be made.

How many organs could be affected clinically in any way by a carcinoma, corresponding in early development to those which we find in the appendix? This difference is very apparent if we compare the course of a carcinoma of the small bowel,—where a diagnosis is never made until obstruction develops,—or a carcinoma of the pylorus of the stomach, with its obstruction.

One might quote the very infrequent occurrence of metastases in carcinoma of the appendix, (McWilliams finding only 6 per cent. with secondary growth) as representing a pathologically benign tumor, for we occasionally meet neglected cases, in which the appendix has not been removed early. It must not be overlooked that cases deemed as primary carcinoma of the appendix are those in which the cecum has not been involved. When this exists, they have been regarded as too far advanced to find the primary growth. This unfortunately places us

in the same predicament in the neglected and advanced cases of carcinoma of the appendix, in which we find ourselves with regard to all advanced carcinomata. Again, acute appendicitis with sloughing must undoubtedly remove many primary carcinomata which would otherwise be permitted to develop to the late and advanced stages. The growth is undoubtedly clinically benign and only one case has been reported,—that of Lejars, in which the removal of the involved appendix was later followed by a secondary development in the cecum and death. McWilliams would compare these growths with rodent ulcers and epulides, rather than with alimentary tract carcinomata.

The location of the tumor in the appendix favors its slow growth and slow spreading, over 75 per cent. being situated below the middle of the appendix. No appreciable difference is noticed in the malignancy of the different types of tumors,—the spheroidal-cell type being found in 53 per cent., the columnar in 35 per cent., and the remainder as scattering types. These tumors have been found associated with all types of appendicitis, but the obliterative type seems to have existed in a slight majority of the cases. This is especially emphasized by those who maintain that misplaced cells and chronic irritation are prime etiological factors of carcinomata.

There are no symptoms pathognomonic of early carcinoma of the appendix. The symptoms of appendicitis are recognized early and possibly occur early in carcinoma, since the growth may have the same effect as does a fecal concretion. This will continue to make the treatment and results entirely satisfactory, even if the primary carcinoma cannot be diagnosed as such from a definite symptom-complex.

The treatment consists in the removal of the appendix. Few appendices are recognized as malignant until the tissue has been subjected to a careful microscopical examination. Should the appendix look suspicious or show a circumscribed tumor, it would be well to make a wide dissection of the meso-appendix and remove any enlarged glands. If the growth is situated at the base of the appendix one should cut out a small piece of cecum, otherwise the simple appendix technique may be enployed.

MEDICAL AND SURGICAL PROGRESS.

INDUSTRIAL DISEASES AFFECTING THE NERVOUS SYSTEM.

A REVIEW OF RECENT LITERATURE.

By Sidney I. Schwab, M. D., of the Editorial Staff.

1. Teleky: Zur Kasuistik der Bleilahmung. Ein Beitrag zur Edinger'schen Aufbrauchtheorie. (*Deutsche Zeitschrift fuer Nervenheilkunde,* Vol. 37, pp. 234-304, 1909.)
2. Mott: Examination of the Nervous System in a Case of Chronic Lead Encephalitis. (*Archives of Neurology and Psychiatry.*)
3. Kehrer: Ueber Abstinenzpsychosen bei chronischen Vergiftungen (*Zeitschr. f. d. ges. Neur. u. Psych.,* III., Heft 4.)
4. Shrumpf and Zabel: Klinische und experimentelle Untersuchungen ueber die Antimonvergiftung der Schriftsetzer. (*Archiv. fuer experim. Pathol. u. Pharmakol.,* LXIII., Heft 3 u. 4, 1910.)
5. Sicard and Bloch: Paralysie générale et saturnisme. Réaction de Wassermann. (*Rev. neur.* 18, 2, 118, 1910.)
6. Bergonia: Traitment des Accidents Causés par L' Electricité Industrielle. (*Paris Médical,* December 10th, 1910.)
7. Auerbach: Ein Fall von Kupferneuritis. (*Zeitschr. f. Nervenheilk.,* Bd. 39, s. 115, 1910.)
8. Thebault: Telephone Operators' Neurosis. (*Presse Méd.* No. 66, p. 630.)
9. Bing: Beitrag zur Kenntnis der industriellen Vergiftungen mit Methylderivaten. (*Schweiz. Rundsch. f. Med.,* 1910.)
10. Knierim: Ueber eine seltenere Lokalisation von abgelagertem Schwefelblei bei chronischer Bleivergiftung. (*Deutsche med. Wochenschr.,* No. 42, 1910.)
11. Sternberg and Grossmann: Zwei bemerkenswerte Fælle von Arbeitertetanie. (*Deutsche Zeitschr. f. Nervenheilk.,* Vol. 39, Heft 5 u. 6, 1910.)

The increasing interest which industrial diseases has awakened among sociologists, economists, and hygienists, as reflected in the legislative enactments in various states in this country and Europe, more particularly as is shown by the Labor Legislation Meeting recently held in St. Louis, has suggested a review of recent literature on industrial diseases, particularly as it affects the nervous system.

Lead is the most important poison used in the industries which shows its primary effect on the nervous system. It is used in many kinds of

trades, and the customary lack of protection to workers accounts probably for the great number of papers which are found on this subject. Among the most interesting is that by Teleky of Vienna (1), who, by the way, is a *privat-docent* for sociological medicine. This paper is a contribution, not only to the frequency and occurrence of lead poisoning in the trade, but is likewise a valuable piece of work directed towards the explanation of the selective action of lead poisoning upon certain groups of muscles. It has heretofore been believed that lead, like many other poisons, has the power to select certain muscles or muscle groups to be the seat of degenerative process. Teleky's theory is based upon Edinger's exhaustion theory. This in brief explains the selective action of poisons by the fact that the peripheral or any part of the central nervous system, which becomes exhausted, offers less resistance to any kind of poison.

Teleky shows that the muscles used by the worker in lead, either excessively or exclusively, are the ones that are paralyzed by the lead. In painters the pronators and extensors are affected most frequently; in other workers similar conditions were found, so that from a large material and a careful analysis of individual cases he comes to the conclusion that lead has very little selective action as such; that the picking out of individual muscles or muscle groups to the nerves supplying them is practically always due to the over-use of these muscle groups; and that the muscles which are most strongly and frequently used are the muscle groups that succumb most readily to lead poisoning. F. W. Mott (2) describes a condition which closely simulates that of dementia paralytica. He finds the blood-vessel walls of the artery and veins degenerated, hemorrhages scattered throughout the brain filling in the perivascular spaces. The neuroglia is increased both in the white and in the gray matter. It is interesting to note that in this case of Mott's the patient was in a delirious condition closely approaching the clinical picture of lead psychosis. The changes that are found in the case are so suggestive of dementia paralytica that it seems to support the contention of certain German neurologists that lead does not produce any special form of insanity, but that the majority of cases are real paretics. Another interesting fact of this study is that the chemical examination of the brain showed no traces of lead.

Kehrer (3) gives an interesting description of the cases of two painters, one fifty-two years of age, the other twenty-five, who worked with oil colors, and were both acutely affected with psychosis. In this paper there is a clear description of the various pathological findings in cases of lead poisoning. He calls special attention to the recent differentiation between lead meningitis and lead encephalopathy. The following four forms are recognized: First, a latent variety recognized only by the findings in lumbar puncture, lymphocytosis and increase in pressure; second, incomplete appearing with colic, shown by headache, vomiting and increase of reflexes; third, an acute or subacute precocious form found especially in young individuals, a meningitis symptom complex, epileptic form, a delirious symptom complex; fourth, a late developing acute or subacute form recognized by headache, vomiting, slowing of the pulse and paralytic symptoms. The conclusion to which this author has come is that on account of the great varieties of psychical symptoms found in lead poisoning there is no characteristic symptom complex. Lead of itself can cause any kind of physical disease and can be considered in the words of Beer as metallic narcotic and stands in similar position to that of alcohol.

Shrumpf and Zabel (4) take up the subject of lead poisoning in typesetters, and bring out the interesting fact that a true lead intoxication is seldom met with in this profession, although lead poisoning is frequent enough. On account of the alloy used, an antimony poisoning follows, especially found in youthful workers; after the thirtieth year it is seldom found. The usual symptoms are nervousness, irritability, insomnia, generalized fatigue, vertigo, headache, pain along the muscles or nerves, intestinal disturbances, definite lessening of leucocytes, eosinophilia, lowered blood-pressure, antimony in the stools. Prognosis is usually good. It is well to remember that the statistics of lead poisoning in typesetters is probably incorrect on account of the prevalence of the antimony poisoning in that class of workers.

Sicard and Bloch (5) demonstrated a case of supposed psychosis due to lead poisoning with symptoms strongly suggesting dementia paralytica. The examination of the spinal fiuid showed a positive Wassermann which made the diagnosis of paresis certain. This is in line with the assumption of many German neurologists that lead does not produce any definite and characteristic form of mental disease.

Bergonia (6) discusses briefly the treatment of accidents caused by electricity used industrially and gives some interesting data on the causes which act in producing the most serious effects. This depends chiefly on two factors: First, the intensity of the current to which the patient is exposed, and second, the path of the current through the patient's body. The effect of an electrical current upon an industrial worker may be so severe as to cause immediate death or so slight that no trace is left after the first initial shock. The author calls particular attention to the prevalence of hysterical symptoms following electrical actions, especially in such cases in which the immediate effect is rather slight.

Auerbach (7) records a case of a neuritis occurring in a coppersmith, aged forty, which he attributes to copper poisoning. The German neurologists have been doubtful about the occurrence of copper poisoning. The teeth and gums in this case were healthy, and there was no green line to be seen. The patient had pain and weakness in certain muscles of the right upper limb, chiefly in the large proximal muscles, also in the right lower limb, especially in the gluteal muscles. The affected muscles showed partial reactions of degeneration. There was some sensory loss on the outer posterior aspect of the right hand and forearm. The right knee jerk and left ankle jerk were absent. The sphincters were unaffected. The patient improved under treatment, but on resuming his occupation he relapsed.

Thebault (8) describes what he considered a definite type of neurasthenia occurring in the telephone girls of Paris, where the conditions of work are not as hygienic as they should be. The symptoms are those of a general neurasthenia—headache, neuralgia, alteration in temperament, digestive disturbances, constipation, insomnia, loss of self-control. Recommendations for treatment or the removal of the cause and other hygienic measures.

Bing (9) describes two cases of ethyl bromide poisoning, the first with intension tremor in the right arm, the second with an acute polyneuritis chiefly of the sensory type. The latter patient was exposed to the effects of methyl alcohol.

Knierim (10) describes a case of lead poisoning in which the lead deposit of a dark gray color was found in the mucous membrane of the lips. It probably was produced by the rubbing of the mucous membrane

against the teeth which had become decayed and probably covered with the deposit of lead.

Sternberg and Grossmann (11) describe two cases of tetany to which they give the name of workers' tetany (Arbeitertetanie). The symptoms of the first case began two months before, in the following way: In the morning on waking up, painful cramps were felt in both hands which lasted about a quarter of an hour. The hands were strongly flexed. These like attacks were repeated in the evenings and the following night. Upon examination it was found that the hands of the patient were in a typical tetany position. The second case, a boy of seventeen years, who worked in the same place and under the same conditions, showed practically the same symptoms. Both boys were zinc worker apprentices. In both of them the strictly tetany symptoms were accompanied by constitutional symptoms of temperature and pulse. In the first case there was a marked degree of spasticity. Frankl Hochvart was the first who called attention to the occurrence of tetany in certain special quarters and among families. He was inclined to believe that this gave support to the infectious theory of the disease. The authors of this paper, however, call attention to the fact that tetany occurs in a great proportion of cases among workers in factories and day laborers, and especially among young individuals, boys particularly who work in the factories where various operations with metal are necessary. Some have declared tetany to be an occupation neurosis. That, however, has long been given up. Some have tried to bring the material which the worker handles into relationship with the recurrence of the disease. This was particularly true for the frequent occurrence of the disease in shoemakers and tailors, but this cannot be accepted as a fact on account of the marked difference of material used in these trades. The conclusions the authors arrive at are interesting. They believe that the so-called workers' tetany is especially to be brought into relationship with the housing of the workers, and is in a sense an epidemic disease, inasmuch as the apprentices in Vienna especially live together and practically no change or improvement is made in their quarters. The workers' tetany is therefore to be considered an industrial disease only in the sense that the workers have a peculiar condition of housing.

THE PATHOLOGY OF THE THYMUS.

A REVIEW OF RECENT LITERATURE.

By ALFRED FRIEDLANDER, M. D., of the Editorial Staff.

1. Pappenheimer: Normal and Pathological History of the Thymus. (*Journal of Med. Research,* February, 1910.)
2. Marfan: Pathology of the Thymus. (*Arch. de Méd. des Enf.,* November, 1910.)
3. Nordman: Experimental Studies on Thymus. (*Arch. f. Klin. Chir.,* xcii, No. 4.)
4. Klose: Thymus Extirpation and Its Consequences. (*Arch. f. Klin. Chir.,* xcii.)
5. Biedl: Innere Sekretion (1910), p. 108 ff.
6. Lucien and Parisot: Thymus Extirpation. (*Arch. de Méd. Exper.,* January, 1910.)

The most important recent contribution to the histopathology of the thymus gland is that of Pappenheimer. As a result of his studies Pappenheimer concludes that the thymus is not a lymphoid structure. It has no definite capsule nor peripheral lymph sinuses containing lymphocytes. It has no fibrous reticulum such as is common in all lymphoid tissue. The reticulum of the thymus is formed by anastomosing protoplasmic processes given off by the reticular epithelial cells. Normally, there are no connective tissue fibres demonstrable within the lobules save those accompanying the blood-vessels. There are slight but distinct morphologic differences demonstrable between the small thymus cells and true lymphocytes.

There are no germinal follicles in the cortex.

The thymus contains peculiarly differentiated structural elements such as are never found in true lymph glands. These are (a) mononuclear oxyphilic granules, (b) Hassall corpuscles, (c) myoid cells.

It seems probable that the thymus must be classed as an epithelial rather than as a lymphoid organ.

While it is probable that the thymus is an organ of internal secretion, it is certain that structurally it bears little resemblence to the other ductless glands, with the single exception of the epiphysis cerebri. What the active secreting elements are and how the secreted substance is elaborated are questions not to be answered as yet.

The normal involution of the thymus. If we take the entire weight of the gland as a guide we are forced to the conclusion that development proceeds gradually to reach its maximum at the fifteenth year (completion of puberty). During the next five years the weight of the gland diminishes rapidly, and from the twentieth year more gradually. But the total weight of the gland is not an absolute index of the functional activity of the gland. Pappenheimer thinks that it seems certain that the

thymus is in an evolutional state up to puberty, involution beginning at this time rather than in early childhood. Other authors, notably Biedl, (in his recent work on "Innere Sekretion") are of the same opinion. (By many, however, the view is held that the period of greatest functional activity of the thymus is the first two years of life, that functionally the thymus plays a gradually decreasing rôle thereafter, even though physical involution does not begin before puberty.) The essential features of involution are a gradual disappearance of the parenchymal epithelium and a replacement with fat and connective tissue. Normally there is no invasion of the lobules with connective tissue so that the natural involution is in no sense a sclerosis of the gland.

In a series of carefully studied cases of status lymphaticus, Pappenheimer finds absolutely *no* characteristic changes in the thymus, other than the simple hypertrophy. In diseases of the ductless glands (Basedow's, Addison's, and acromegaly) Pappenheimer finds simply active proliferation of the thymic elements and absence of regressive changes. In certain of the infectious diseases there is nearly always a distinct atrophy (fibrosis) of the thymus. In some of the acute infections there is a marked destruction of thymus tissue, in chronic diseases this is accompanied by a replacement hyperplasia of the connective-tissue.

The most complete recent summary of the clinical pathology of the thymus is that of Marfan.

Discussing hypertrophy, he finds that in this condition there is a marked hyperplasia, particularly of the lymphocytes, with hyperemia. The engorgement of the vessels doubtless plays an important part in the production of symptoms. A simple hypertrophy occurs to some extent in the acute infectious diseases, but is more apt to occur in the chronic infections such as syphilis or tuberculosis, also in rickets, in certain diseases of the ductless glands and in some cases of congenital heart lesion. It also forms a part of cases of so-called status lymphaticus, where in addition to the enlarged thymus, we have a hyperplasia of the lymphoid structures throughout the body (tonsillar ring, lymph-glands, spleen, intestinal follicles, together with the hypoplasia of the arterial system.)

Hypertrophy is most common in the first two years of life, but is not limited to this period as it may occur even after puberty.

Premature atrophy of the thymus is found in cases of athrepsia and is to be regarded as an effect rather than a cause of the disease.

The symptoms of thymic disease (by which in the vast majority of the cases is meant thymic hypertrophy), are to be explained as effects dependent upon mechanical compression of neighboring organs, especially the trachea, or effects due to the toxic action of internal thymic secretion. The physical signs of enlarged thymus are of great importance. By percussion, the enlarged thymus may be made out without great difficulty in the majority of cases. Blumenreich has shown that the normal thymus dulness is in the shape of a truncated cone whose base is the sterno-clavicular junction and whose apex is at the level of the second rib. Laterally, the normal thymus should not project more than 6 cm. beyond the sternal margins. Increase of the lateral diameter therefore means enlarged thymus. The *x*-ray offers information of great value in the diagnosis of enlarged thymus as first pointed out by Hochsinger. A typical broadening of the normal thymus shadow is found in most cases of enlarged thymus. This picture can sometimes be obtained when even percussion is negative.

The symptoms of thymic compression are those usually summed up

in the picture of so-called thymic asthma. There is usually a marked inspiratory stridor. With this there is a change in the shape of the chest, an increase in the antero-posterior, a decrease in the lateral diameter of the chest. Often there are violent paroxysmal attacks of violent dyspnoea with cyanosis. The compression of the trachea by the thymus always takes place at the same level, the superior strait of the anterior mediastinum. The antero-posterior diameter of the strait never exceeds 2 cm. in early life (so-called "critical space" of Grawitz) and a hypertrophied thymus often has a thickness exceeding 1.5 cm. The possibility of tracheal stenosis at this age, when the rings are soft and the space narrow thus becomes great. Compression of the great vessels may of course also occur with the attendant consequences. Even the esophagus has been severely compressed in a few cases.

As is well known, in these cases of hypertrophied thymus, especially when found in lymphatic subjects, sudden death is not uncommon either after slight trauma, mild infection, anesthesia, or without assignable cause. A definite explanation for the sudden death in these cases, at least for the mechanism of its production, has as yet not been found.

Svehla's theory of hyperthymization of the body lacks confirmation as yet. The diagnosis of hypertrophied thymus is often extremely difficult. In the first place in many cases the hypertrophied thymus per se causes no symptoms. In all cases when there is a suspicion, especially where there is enlargement of the lymphoid tissue and of the spleen, careful percussion and radioscopy of the thymus area should be made routine procedure.

In the cases with thymic asthma, either continuous or paroxysmal, the diagnosis is easier. The association of thymic asthma, with enlarged percussion area and enlarged radiographic shadow of the thymus will permit the diagnosis of enlarged thymus, and this in conjunction with hyperplasia of the lymphoid structures of the body and enlarged spleen, will in turn justify the diagnosis of status lymphaticus.

(Examination of the blood in such subjects, if they be under two years of age, will show a constant lymphocytosis.—Editor.)

Treatment.—In mild chronic cases, Marfan recommends general tonic treatment, because it is well known that the symptoms tend to disappear, or grow less marked toward the end of the second year, when the normal involution of the gland begins.

In the serious cases, however, medicinal treatment is of no avail. Here we must have recourse to (a) introduction of long cannula into the trachea, (b) surgical measures, (c) radiotherapy. Intubation is impossible, inasmuch as the tube cannot remain in place long enough to be of avail without causing dangerous complications. Thymectomy has been successfully practiced a number of times, radiography has been used successfully also. Klose has recently contributed a report on thymectomy for tracheostenosis for enlarged thymus. Rehn has collected 21 cases of thymectomy, with sixteen recoveries. According to Klose's studies, which were largely experimental, the thymus is a vital organ which may not be completely removed during its period of functional activity, without grave danger to the development of the organism. After complete thymectomy (in the human being as well as in the lower animals) there are produced grave symptoms of acid intoxication, probably nucleinic acid poisoning, and diminution of the calcium salts. Later on, as has been shown by experiment, if the animal or child survive, there are grave changes in the osseous and central nervous systems.

Klose is convinced, however, that partial thymectomy, even at the height of functional activity, will not cause permanent damage. It would appear that when a large part of the thymus is thus removed, that the spleen is the organ of functional substitution.

Nordman has also made a study of the effects of thymectomy. He could not agree with the findings of Basch and Klose, upon thymectomized dogs, but he found that complete thymectomy was always followed by death within twelve months.

Lucien and Parisot find that thymectomy produces very marked metabolic changes, especially in central nervous and osseous systems. They used rabbits instead of dogs.

(Aside from the question of the after-effects of thymectomy which are certainly serious, it is to be borne in mind that the operation itself is exceedingly dangerous. It seems important therefore to call attention again to the value of the *x*-ray in the treatment of this condition. Marfan refers to one case successfully treated by the *x*-ray, reported by the author of this review. Since the case was reported, five more have been successfully treated, and a series of animal experiments have shown that it is perfectly feasible to cause fibrosis of the thymus and shrinkage in size in animals. A detailed report of the work is to be published in the near future.—Editor.)

THE AFFECTIONS OF THE KNEE.

A REVIEW OF RECENT LITERATURE.

By NATHANIEL ALLISON, M. D., of the Editorial Staff.

1. Watson: Treatment of Tuberculosis of the Knee. (*The Practitioner,* March, 1910.)
2. Ely: A Study of Joint Tuberculosis with an Original Theory as Its Localization and a New Plan of Operation Based on the Pathology. (*Surgery, Gynecology and Obstetrics,* June, 1910.)
3. Hazen: Traumatic Affections of the Knee-Joint. (*Long Island Medical Jour.,* March, 1910.)
4. Drehmann: The Para-Articular Correction of Angular Ankylosis of the Knee. (*Zeitschr. fuer Ortho. Chir.* B. XXV., 1910.)
5. Myers: Cases of Transplantation of the Flexor Muscles of the Knee to Increase the Power of the Extensor Muscles with Remarks on the Indications for the Operation. (*St. Luke's Hospital Report,* Vol. I., 1908-09.)
6. Jones: Notes on Derangement of the Knee. (*Annals of Surgery,* January, 1910.)

Watson believes that there are two kinds of knees worth having, a movable stable knee and a fixed straight knee. Where the knee has been infected with tuberculosis he believes that operation should have for its object the production of a stiff straight knee. Erosion will seldom produce this result and the resulting fibrous ankylosis means flexion and failure. In young adults, therefore, excision is the best operation. In children tuberculosis is bad enough but erosion and excision are worse. All uncomplicated cases should be treated by conservative methods. An operation should only be done where there is abscess formation.

Ely believes that only two tissues in a joint, the synovia and the red marrow are subject to tuberculosis. These tissues disappear in a joint which has been deprived of its function and consequently the disease dies out, therefore the treatment of tuberculous joint disease should consist chiefly of depriving the joint of function. He does not believe with Nichols that joint tuberculosis always originates in a bony focus but is of the opinion that tuberculosis is often primarily synovial. He explains the pathology of the bone focus in this way: The primary infection is in the marrow of the epiphysis and the tuberculous granulations advance in the marrow surrounding the trabeculæ shutting off their nutrition and killing them altogether with the formation of sequestrum or of small particles known as bone sand. This tuberculous tissue growing in the marrow reaches the joint. The cartilages of the joint act as barriers to its progress, but they are either perforated or the granulations shut off their nutrition and lift them like a leaf, or the granulations travel under the cartilages and reach the joint at the side. During this process the

joint is the seat of serous effusion. Where the disease is primarily synovial be believes the tubercle is deposited in the membrane itself. In bone tuberculosis the only tissue that is directly affected is the marrow. The entire pathological process seems to show an effort on nature's part to abolish function and to deprive the joint of motion. It is the author's opinion that any operation which causes the epiphysis to lose their cancellous structure will cause a disappearance of the disease at that spot, and any operation which deprives the synovial membranes absolutely of function causes them to lose their distinctive structure and cures the tuberculous disease in them; therefore, in children protection of the joint, meaning by this, the abolition of function, will suffice for a cure, and in adults it is only necessary to excise such tissue as will deprive the joint of function. These observations are all particularly interesting in their application to tuberculosis of the knee-joint.

Hazen has shown that thé human knee is more prone to injuries and resulting disease, on account of its anatomical structure, than are the knees of the lower animals. He believes that the unstable mechanical nature of the knee joint exposes it to constant injury and consequently to disease. The indirect injury is a more potent cause of disease than is the direct. The inner condyle of the knee is more frequently the seat of trouble than is the external and he explains this by pointing out the fact that the range of motion at the internal condyle is greater. He believes that exploratory operations should be more frequently employed to determine definitely the condition in doubtful cases of knee affection.

Drehmann gives the following reasons for objecting to excision of the knee. When the operation is severe the posterior capsule must be stretched in order to correct a severe deformity and there may result peroneal paralysis and embarrassment of the popliteal artery. Severe deformity requires so large a wedge to be removed that considerable shortening results. As a substitute for this in severe cases of angular ankylosis of the knee he recommends an osteotomy of the fibula several centimeters below its head, care being taken to avoid the peroneal nerve. Osteotomy of the tiba through an anterior incision beneath the tubercle, obliquely from below upward and from before backward. A thorough stretching of the soft parts in the popliteal space, using the legs as a lever. A section of the soft parts is superfluous, or even injurious. Finally, a supracondylar osteotomy of the femur obliquely from before backward and from above downward. The knee is straightened to a slightly obtuse angle and dressed in plaster. At the end of eight days cast is removed, sutures removed from the incisions and a full extension of the knee-joint made under a brief anesthesia. Plaster applied with knee in full extension. This second redressment is important in preventing a too great dislocation of the fragments at the first operation.

Myers has reported two cases of inability to extend the knee where the hamstring muscles had power. In both of these the internal hamstrings were transplanted into the quadriceps tendon and in both cases walking was possible without any support to the knee.

The article of Jones on "Derangements of the Knee" is based upon an experience of over 500 operations. The cases of injury to the cartilages are usually accompanied by a history of strain or injury, the initial displacement as a rule being the most severe. In his series the external semi-lunar was affected in only 7 per cent. of the cases, the internal cartilage being more frequently involved on account of its anatomy. Being more firmly fixed by ligamentous attachment than the external it is

bound to give way after certain motions of external rotation. Of the 117 cases operated upon 7 were displacements of the posterior horns; 12 were fractured transversely opposite the internal lateral ligament; 8 were loosely bound circumferentially with no other appreciable abnormality; 8 had undergone changes in the loose anterior extremity of the semilunar of a nodular type, some being as lumpy and large as a pea; 3 exhibited no trace of the cartilage; and 2 showed the anterior part doubled and adherent to the posterior part. In the other cases classification was not possible; some cartilages were friable and others presented fringed edges. The differential diagnosis of displaced semilunar cartilages includes the consideration of synovial fringes; loose bodies; lipomata; osteomata; and rupture of the crucials, and the author gives his ideas on the clinical points which separate these conditions as follows: The symptoms of the nipping of a synovial fringe are less acute in its primary occurrence than are those of a displaced cartilage. The pain is strictly local and is not participated in by the internal lateral ligament. Frequently a prominence may be found over the site of pain, and no matter how often the nipping occurs effusion follows, creaking in the joint is a frequent accompaniment, and often an obvious swelling occurs on each side of the ligamentum patellæ (due to the chronic thickening of the infrapatellar pad). Loose bodies can usually be found and isolated by the patient. They often lock the knee but only transitorily. The symptoms are sharp but not acute, and unless pedunculated they may be referred to different places. Effusions are common. Lipomata will sometimes lock the joint. There is often swelling about the lower part of the patella and painless effusions. Exercise rather than accident produces the symptoms which are rarely acute, and pressure on the knee will produce no pain. Osteomata can be found by manipulation and by radiography. They sometimes lock the joint when a muscle or tendon becomes entangled. Rupture of the crucials is the accompaniment of so severe an injury that other structures participate in the general strain. The tibia can be made to glide in a to-and-fro direction, and when the knee is flexed lateral movements are free. If the lateral ligaments are torn, lateral movements in the extended position are also free. As to the indications for operation the author gives the following rules: "In the first place, I refuse to operate in any case I see early, the subject of a first derangement. I discourage operation in those recurrent cases where the symptoms are transient and not followed by irritation of the joint. I strongly urge operation in those cases where a recurrent displacement is at times followed by acute symptoms. I advise it in all recurrent cases where a strenuous athletic life is a means of livelihood or a physical necessity. I think operation absolutely imperative in the case of men who work or stand in dangerous places and where a yielding of the knee may lead to serious consequences. Practically age has no influence over me if the indications I mention are present. I have operated upon a boy of fifteen and a woman of fifty-four.

"Is there any danger apart from periodic trouble in a slipping semilunar? I can clinically support Mr. Arbuthnot Lane when he says it may prove the exciting cause of tubercle. Frequently I have examined patients with tubercular knees and patients with rheumatoid arthritis whose early history was associated with internal derangements of the knees and in several cases of badly recurring injuries I have found sometimes congestion and sometimes erosion of the bone and cartilage upon which they rested."

FIBROMATA OF THE NASOPHARYNX.

A REVIEW OF RECENT LITERATURE.

By W. B. CHAMBERLIN, M. D., of the Editorial Staff.

1. Bond (*Journ. of Laryng., Rhinol. and Otol.*, p. 28, January 1909).
2. Bond (*Proceed. of the Royal Society of Medicine*, Laryng. Sec., p. 37, 1908-09).
3. Canfield (*Physician and Surgeon*, XXXIII., p. 123, 1910).
4. Calhoun (*Laryngoscope*, XIX., p. 934, 1909).
5. Getchell (*Trans. Amer. Laryng. Society*, p. 50, 1909).
6. Hansberg (*Verh. des Vereins deutscher Laryng.*, p. 42, 1910).
7. Lincoln (*Archiv. of Laryng.*, IV., No. 4, October, 1883).
8. Mann (*Memphis Med. Monthly*, p. 348, July, 1909).
9. Nager (*Verh. des Vereins sueddeutsch. Laryng.*, p. 510, 1908).
10. Swain (*Annals of Otology*, XVIII., p. 530, 1909).
11. Tilley (*Proceed. of the Royal Society of Medicine*, Laryng. Sec., p. 96, April, 1910).
12. Wright (*American Textbook*, p. 1091).

Fibroma of the nasopharynx is a fairly rare affection; not so rare, however, as the reported cases might lead one to conclude. Certainly a large number of cases do not fall to the lot of any single practitioner, three being the highest reported by any one man. Lincoln, choosing arbitrarily the years 1867 to 1883, inclusively, could find only 58 cases reported in the literature, 3 of these being his own. In the earlier days before specialism, when these cases came under the care of the general surgeon, the removal of fibromata of the nasopharynx was indeed a formidable operation, involving usually a preliminary tracheotomy and subsequent resection of the superior maxilla, and, if necessary, portions of the other bones of the face. In young subjects the relief was certainly heroic and deaths on the table, or shortly after, were not infrequent. Even after such thorough extirpation the growths in young subjects frequently recurred, while the resulting external deformity was often frightful. In those cases collected by Lincoln which were operated by removal of the bones of the face, 28 cases or over 25 per cent. died upon the table or shortly after. Calhoun mentions two cases operated by colleagues with fatal results from hemorrhage. On the other hand, in defense of the general surgeons, it may possibly be argued that the cases seen by them were more advanced, whereas those seen by the specialist to-day are usually in the early stages of the growth.

Wright in the *American Textbook*, quoted by Getchell defines fibroma of the nasopharynx as "histologically a benign growth, which owing to its situation gives rise to symptoms which if unrelieved are almost certain to result in death. Such growths demand operation. They usually occur in males and between the ages of ten and twenty-five years. This influence of age is so marked that not a few cases are recorded of spontaneous recession of the growth after this period; affording in this re-

spect a marked resemblance to another nasopharyngeal growth—namely, lymphoid hypertrophy or adenoid vegetations."

These growths spring from the dense fibrous tissue and periosteum which covers the basilar process of the occipital bone and body of the sphenoid. As regards form they may be sessile or pedunculated, single of multilocular. In size they vary from the smallest which may cause annoyance and, therefore, lead to examination, up to extensive masses involving the accessory sinuses, the soft tissues of the neck and face as well as the brain and skull cavity. All operators agree that such growths should be removed thoroughly as soon as detected. Lincoln well summarizes the objects of treatment as:—

(1) The removal of all growths as far as possible together with destruction of tissue at the point of origin.

(2) The avoidance of accidents at or immediately following the operation.

(3) Securing the least external deformity.

The dangers are shock at the time of operation and hemorrhage at the time or after. Extreme shock has been removed or certainly minimized by improvement in technique. Whereas the removal of the superior maxilla and other portions of the bones of the face was the rule of the older surgeons, all seem agreed at the present time that the operation can be successfully performed in practically all cases through the natural passages—the nose and mouth. The extreme vascularity of these growths makes hemorrhage a danger which is ever present, not only at the time but subsequent to the operation. Naturally this danger is greater where the growths are sessile and extensive than when they are attached by a small pedicle. In the former case the preliminary ligation of one or both external carotids is recommended by most operators.

The technique of removal varies in the hands of different operators and according to the conditions met with in various cases. With pedunculated growths the cold- or galvano-cautery snare seems to be an ideal instrument. Difficulty however is frequently experienced in finding a snare sufficiently strong. With sessile growths the use of the snare is hardly possible and biting forceps, scissors or larger and stronger forceps for evulsion must be resorted to. If the mouth or nose furnishes too small a portal of entry to the field of operation a preliminary Denker operation through the nose and antrum will offer increased and sufficient room.

Recurrences are always probable in cases under twenty to twenty-five years. This period is usually spoken of as the immune age.

Various measures have been resorted to in order to prevent recurrences in young subjects before the so-called immune age has been reached. Electrolysis and the cauterizing of tissue at the point of origin seem to offer the best means of prevention. Even these measures are unsuccessful in a large proportion of cases although frequently repeated. Such young subjects must be operated repeatedly whenever the growth reaches sufficient size to produce distressing symptoms.

When the age of immunity is reached the growth remaining will tend to disappear or at least will not recur. One operator even reports disappearance in a case which he had given up in despair and pronounced inoperable. The case was seen by him three years after his final fatal prognosis and no signs of the growth were observed.

The earliest symptom complained of is nasal obstruction, as relief is usually sought before more serious signs such as dyspnea, dysphagia and distortion of the face and neck appear.

DIAGNOSTIC AND THERAPEUTIC NOTES.

The Need of Care in the Use of Iodine.—Krehl (*Muench. med. Wochenschr.*, 1910, No. 47). The promiscuous use of iodine, especially in cases of arteriosclerosis, is accompanied by certain dangers, the existence of which is not generally recognized. These dangers are dependent upon the obscure and erratic influence which iodine may exercise upon the over-active thyroid gland. Occasionally, as is well known, a goitre may be favorably influenced by iodine medication, but the reverse is so often true that Krehl believes the administration of iodine in this condition to be more dangerous than operation. Again and again, he says, he has seen a latent or minimal hyperthyroidism turn, after a brief course of iodine medication, into a violent and intractable thyrotoxic condition. This mode of iodine poisoning differs from the ordinary iodism, in that the latter ceases after the discontinuance of the iodine, whereas the former is permanent, once it has set in. Moreover, the diagnosis of a minimal hyperthyroidism is by no means easy. The gland does not need to be enlarged. An otherwise inexplicable loss of weight, a persistent tachycardia, various psychic disturbances and the like justify the suspicion of latent hyperthyroidism. In such conditions, iodine should either not be given at all or at least only with the greatest caution.

A Modification of the Giemsa Stain.—Giemsa (*Muench. med. Wochenschr.*, 1910, No. 47). Giemsa now advises mixing his staining solution, which may be obtained ready-made from a number of dealers, with an equal volume of absolute methyl alcohol. The mixture so obtained is used much like the well-known Wright stain. The slide, on which the blood or secretion has been spread in a very thin layer, is placed in a Petri dish and covered with ten to fifteen drops of the staining mixture. After thirty seconds, ten to fifteen cubic centimetres of distilled water are added, the whole mixed by means of gentle agitation and allowed to stand for from three to five minutes or longer. The slide is then washed thoroughly in distilled water. The resulting stain is not quite as perfect as with his original method, but the slight difference is more than compensated by the ease and rapidity of the procedure.

In this connection we desire to call attention to the satisfactory results we have obtained by means of the Giemsa-stain tabloids put up by Burroughs, Wellcome & Company. A tabloid is ground up in a small mortar and dissolved in about ten cubic centimetres of absolute methyl alcohol, the resulting solution being used just like Wright's stain. Beautiful specimens of blood or of the spirochæta pallida can so be obtained.

A New Method of Examining Sputum for Tubercle Bacilli.—Loeffler (*Deutsch. med. Wochenschr.*, 1910, No. 43). A great advance in our methods of examining sputum, containing very few tubercle bacilli, was made when Uhlenhuth suggested the use of antiformin. Antiformin, which can now be readily obtained, consists of a mixture of sodium hypochlorite and sodium hydrate. It very readily disintegrates and dissolves all sorts of organic substances, including sputum, and destroys all the microörganisms except tubercle bacilli and other acid-fast bacteria. The latter remain practically untouched. A variety of modifications of his method has been advocated, of which that of Loeffler deserves particular mention.

The sputum is placed in a flask, mixed with an equal amount of 50 per cent. antiformin and the whole heated to boiling. A clear, pale-brown fluid results. After cooling, add to 10 c.c. of the solution, 1.5 c.c. of a mixture of one part of chloroform and nine of alcohol. Shake until the chloroform has been completely emulsified. Centrifugate for fifteen minutes. The chloroform is thrown down nearly completely and between the layer of chloroform and the supernatant sputum, a disk of sediment has formed containing all of the tubercle bacilli. This disk is taken out, mixed on a slide with a little egg albumin, which may be kept in stock by adding to it 0.55 per cent. phenol, spread out in a thin layer on a glass slide and stained in the usual manner.

Hypodermoclysis of Sugar Solutions in Eclampsia.—Frankenstein (*Muench. med. Wochenschr.*, 1910, No. 45). Since eclampsia is due to a toxemia, the ingestion of large quantities of water is an important element in the treatment. Only so can the toxic substances present in the blood be eliminated through the kidneys and otherwise. The usual method of introducing this fluid, namely, by means of hypodermoclysis of physiological salt solution, involves however a grave error, in that the salt thereby administered, constitutes a serious danger in view of the injured and incompetent kidneys. Attempts have been made to avoid this difficulty by injecting hypotonic saline solutions under the skin or by giving plain water by stomach or rectum. The former method, however, only half eliminates the difficulty, the latter does not insure prompt absorption of the water. The writer believes that the difficulty can be overcome by using a 4 per cent. solution of grape sugar subcutaneously. The injection is nearly painless, it is free from danger and the sugar acts not only as a food but as a diuretic. The method seems clearly worth a trial.

The Therapeutic Use of Cutaneous Inoculations of Tuberculin.—Poeppelmann (*Berl. klin. Wochenschr.*, 1910, No. 42). The diagnostic value of v. Pirquet's cutaneous inoculation with tuberculin is now generally recognized. Poeppelmann, however, uses it for therapeutic purposes. The inoculations are done just as for diagnosis, undiluted old tuberculin being used, but are repeated every four to ten days. The treatment is a very mild one and is especially indicated in feeble patients, since strong reactions do not occur. The author's reports seem to show

that the results compare favorably with those obtained by means of tuberculin injections.

The Prognostic Value of v. Pirquet's Cutaneous Tuberculin Reaction.—Lichtenstein (*Hygiea,* 1910, No. 9). At one of the Stockholm hospitals, 173 consumptives were subjected to v. Pirquet's test, the results recorded and the patients examined a year later. The following results were obtained:—

1. A negative v. Pirquet reaction in manifest pulmonary tuberculosis indicates an absolutely bad prognosis.
2. A positive, especially a strongly positive reaction lends support to a favorable prognosis, as regards prolongation of life.
3. The cutaneous test is of greater prognostic value than the diazo-reaction.

Our own observations are entirely in accord with the above. (Editor's note.)

Pulsating Tongue in Aortic Insufficiency.—Minervini (*Sem. méd.,* 1910, No. 41). In some cases of aortic regurgitation rhythmic movements can be observed in the tongue and usually also in the entire base of the mouth. They are synchronous with the pulse and vary in intensity with the degree of hypertrophy of the left ventricle. They have not been observed in other cardiac affections.

It seems clear that Minervini's pulsating tongue is of the same nature as the systolic contraction of the pupils, the systolic nodding of the head, the capillary pulse, and other similar manifestations characteristic of insufficiency of the aortic valves.

A New Symptom in Acute Otitis Media.—Blum (*Mediz. Klinik.,* 1910, No. 42). Blum has observed that, in acute otitis media, pressure behind the angle of the jaw causes more or less severe pain referred to the depression between the jaw and the anterior edge of the sterno-cleido-mastoid muscle. He believes this symptom to be almost pathognomonic.

The Treatment of Hemophilia.—Krauss (*Muench. med. Wochenschr.,* 1910, No. 46). It has long been known that the injection of a foreign proteid increases the coagulability of the blood. For man we have such a foreign proteid always at hand in diphtheria antitoxin, which should therefore theoretically be of service in hemophilia. In two cases of intractable hemorrhage in two brothers, both bleeders, Krauss saw prompt cessation of the hemorrhage following the injection of one or two cubic centimetres of diphtheria antitoxin. Since the therapeutic action depends merely upon the horse-serum, the antitoxic content of the serum is of no importance in this connection.

CORRESPONDENCE

PARIS LETTER.

TUBERCULIN THERAPY.

By Auguste A. Housquains, M. D.

At the Eleventh French Congress of Medicine the matter of the treatment of tuberculosis by means of serotherapy was discussed. The interesting communications which were read at this Congress showed that though this question is far from being settled, excellent results have been attained. Progress along these lines has been slow because of the complexity of the subject and the numerous difficulties which had to be overcome; but despite these drawbacks, the researches have been prosecuted with so remarkable a perseverance that we must realize that we have in hand a therapy that is both efficacious and well-regulated. Hence it is interesting to examine the method and the means by which the investigators arrived at this form of treatment.

It is important at first to differentiate between tuberculin therapy and antituberculous serotherapy. The former is, according to Castaigne, a toxitherapy; it resembles vaccination and immunizes the organism in a different manner than does serotherapy. Serotherapy introduces in a direct manner into the organism a serum which contains antitoxins that are already formed. These antitoxins come from an animal in which one has developed by vaccination an active immunity against the disease which one wishes to treat. Tuberculin therapy, on the other hand, compels the organism to fabricate directly the immunizing principles; hence this sort of therapy is an active vaccination. This method is excellent, but it demands on the part of the organism an effort to which the organism is not always equal. Moreover, it is not always without danger, for not only does it stimulate the processes of immunization, but it has a tendency to provoke a reaction in pre-esisting organic lesions which may result in their cicatrization. Toxins are injected into patients already infected; hence it is necessary to be careful that a small dose of poison injected does not aggravate the condition and that the organism is in a state to produce the necessary antibodies.

These are the principles of the method. Practically, the treatment of pulmonary tuberculosis by tuberculin has for its basis frequently repeated injections of doses which are progressively strengthened by a preparation containing a small or a large number of the toxins of tubercle bacilli. Of these toxins some are soluble (exobacillary toxins), others are fixed (endobacillary toxins), while others still are at the same time endo- and exobacillary. For this sort of method to be efficacious and at the same

time inoffensive it is easy to understand that it is necessary to have a very exact notion of the dose and of the technique that should be employed.

In the first place, tuberculin therapy is not applicable in all cases of tuberculosis. Useful in some, it is dangerous in others. Hence it is necessary to use judgment in choosing the cases to which this method should be applied. On the surface of tuberculous lesions the treatment causes a reaction, which is as rapid as a cure by cicatrization, though the lung is but slightly capable of limiting the accompanying congestion. In the organism, in general, tuberculin stimulates the processes of immunization, but it is necessary that the tissues be, as was stated before, in a condition to produce antibodies. We should remember that we are dealing in these cases with cells already saturated with poison and therefore hypersensitive. Gouraud has formulated this matter in terms which should be remembered by all of us: The tuberculin treatment should be rejected in all cases where the tuberculosis is in a state of evolution,—that is, in acute or subacute tuberculosis or in chronic tuberculosis which has become acute. Fever constitutes a good criterion, since we ought to limit the use of tuberculin to conditions which are apyretic or almost apyretic. In the latter case, the pulmonary lesions should be left almost in a state of repose and the general condition should not be too greatly disturbed. Excessive emaciation, marked depression, and cachexia constitute counter-indications. Finally, very nervous patients, hysterics, epileptics, and patients with heart disease stand this treatment very badly. On the other hand, the gravity of the lesions is not a contraindication, even hemoptysis does not constitute a reason to lessen the treatment or cease it altogether.

Among the patients having no contraindications, those who are susceptible to the greatest benefits from this method are the following: (1) Those in whom, after having been benefited by a hygienic and dietary treatment, the progress of the disease is arrested and the lesions remain indefinitely stationary; (2) those in whom an apparent cure has taken place, but where the general condition is precarious; and (3) those patients in whom the disease has developed slowly and where the hygienic treatment was not followed, or in those who, on account of professional exigencies, are exposed to complications and to relapses.

The tuberculin preparations which are employed in therapeutics are very numerous. Their value, however, is about equal. The principal preparations are those of Koch (old tuberculin T. A. K.), Denys's tuberculin in filtered bouillon, Béraneck's tuberculin, Landmann's tuberculol and Spengler's I. K. (Immun Koerper). It would be impossible to enumerate all the formulas which have been proposed.

The technique is not complicated. What is necessary is to resort to the habitual precaution of a very rigorous antisepsis. The point of the needle of the syringe is pushed into the subcutaneous cellular tissue in the arm, in the thigh, or in the flank. The injection is slightly painful. The thing to remember in following this method is that the doses should in the beginning be infinitesimal and afterwards be increased very slowly, so that the patient shall not be disturbed by any reaction. The injections are made twice a week; little by little the solutions are strengthened, and when this is done they should be given only once a week or once in two weeks. Moreover, the course of treatment should be subordinated to the manner in which the patient tolerates the medicine. This can be easily ascertained by studying the local and general reactions.

At the point of injection, one will notice a slight redness with some tumefaction and considerable sensitiveness on pressure in the evening or during the next day. Occasionally there is produced a pseudo-phlegmonous induration which at times develops into an urticaria. The general reactions are of much more importance. The study of the thermic curve is necessary, since even the slightest rise in temperature should be looked upon as a reaction. The pulse reacts only rarely. There are such disturbances as anorexia, gastric troubles, vomiting; and finally, depression with headache, somnolence, or nervousness with insomnia. Only very rarely is there a reaction around the pulmonary deposits. When this occurs the cough and the expectoration increase, and there may be signs of a slight congestion. These reactions are often an obstacle to progress in the matter of a cure.

When is it necessary to stop treatment? As regards certain patients the reply to this question is simple, and may be formulated as follows:— The symptoms disappearing, one is justified in saying that a cure is at least apparent. But at times there is only a slight amelioration. In the latter case, it is the custom to stop the treatment after the series of increasing doses has reached the stage when the solution is pure tuberculin. At the end of some months, injections may be repeated if the health of the patient is in need of them.

The effort, to which the organism is subjected by the active vaccination which we call tuberculin therapy, ought to be compensated for by a hygienic and dietetic reparation of its physical forces. But the therapeutic adjuvants employed should be selected with care, since all medicines that are contraindicated when tuberculin is administered must be avoided. We should follow Gouraud's advice and treat only patients who can resort to rest. Creosote is contraindicated. The progress towards recovery is shown only after many days; hence, what should not be forgotten is that the treatment must be persisted in for a long time.

Renon states that tuberculin cannot be considered a comprehensive treatment, since it does not contain all the toxins of the Koch bacillus. Nevertheless, it has undoubtedly an efficacious action in all cases in which the symptoms can be clearly outlined.

Although tuberculin therapy is as yet an imperfect method, it has proved its worth in certain cases, and has even been successful where other forms of treatment have failed. Therefore, when it is a matter of treating so grave an affection as pulmonary tuberculosis, is one justified in withholding from a patient the benefits of a treatment, though it may be handicapped by some imperfections?

February 10th.

BOOK REVIEWS.

DISEASES OF THE STOMACH AND INTESTINES. By Robert Coleman Kemp, M. D., Professor of Gastro-intestinal Diseases in the New York School of Clinical Medicine. With 280 illustrations. Some in colors. Philadelphia and London: W. B. Saunders Company. 1910. Cloth, $6.00.

This work of more than 700 pages is a most satisfactory and complete treatment of the subject. The chapters include among others, the headings of Anatomy and physiology of the stomach and intestines, history taking, methods of *x*-ray examinations, local treatment of the stomach, nervous affections of the stomach, the stomach functions in diseases of other organs, typhoid fever, diverticulitis, and intestinal parasites.

The chapter on visceral displacements has been very fully treated. Movable kidney as one of the stigmata of gastroptosis is present in approximately 95 per cent. of the author's cases. The improvement following promiscuous nephropexy in gastro-intestinal and other symptoms can be often imputed to the post-operative rest in bed and to the increase in fat by proper feeding. Associating with gastroptosis are changes in the position of the duodenum productive of stasis which readily accounts for gall-bladder symptoms simulating stones so often attributed to nephroptosis. The author warns against the frequent mistake of confusing gastroptosis with dilatation of the stomach. The peculiar conformation of the abdomen, the separation of the recti, movable kidney, and the determination that the lower border of the stomach is abnormally low are sufficiently diagnostic of gastroptosis. Three chief principles are involved in the treatment of the condition. 1. The support and strengthening of the abdominal muscles, thereby increasing the intra-abdominal pressure. 2. Increase of abdominal pressure through the accumulation of abdominal fat. 3. Correction of the gastro-intestinal disturbances and toning up the nervous system.

The author gives a detailed description of various forms of abdominal supports and corsets. More detail as to the dietetic management of these cases would not have been amiss here.

The subject of protoscopy and sigmoidoscopy is dismissed with illustrations of several instruments and a few words on technique.

The subject of diverticulitis and peridiverticulitis, which has only recently focused attention on the left iliac fossa, is given a careful and satisfying exposition, and should do much to bring this little known subject to the attention of the practitioner.

The book is profusely illustrated with well-chosen cuts, most of which are original. There are numerous reference-citations, and the whole book shows a painstaking preparation to the end of producing a useful and complete text-book.

THE RELIGIO-MEDICAL MASQUERADE—A COMPLETE EXPOSURE OF CHRISTIAN SCIENCE. By Frederick W. Peabody, LL.B., of the Boston Bar. Boston: The Hancock Press. Price, $1.00.

Mr. Peabody's book, written with the information gained by a first-hand study of Mrs. Eddy's personality and methods, must be received as authoritative. To those who read the investigation and report in *McClure's Magazine*, there is nothing essentially new, except the vitriolic style which Mr. Peabody's indignation impels him to adopt and which he feels is more than justified.

It is doubtful, however, whether books of this class much affect the situation. They are read only by those who are already confirmed in their judgment, and add little to the strength of their opinions,—of course, no "Christian Scientist" will even stop to examine Mr. Peabody's book. In fact, according to history, pseudo-religious movements die out more quickly the less attention is

paid to them, since the seeds are not widely disseminated if the parent weeds are but indifferently attacked.

The almost studied neglect of psychical agencies, on the part of the medical profession, in the matter of cure and comfort for patients, is largely responsible for the growth of such cults as Christian Science. Can it be denied that when the renaissance of medicine and surgery drew the entire attention of the medical fraternity to the operating-room, to the laboratory, in short, to the purely objective study of the phenomena of disease, the emotions, the intricate workings of the mind, were not forgotten? Fortunately, under the leadership of men of the type of Freud, Janet, Prince, and Sidis a better renaissance in medicine is dawning, and when this shall have received full recognition the demand for such unscientific and essentially ignorant applications of psychic curative measures as are Christian Science, et al., will lessen and eventually disappear. Books, no matter how numerous, or how well written, will not stamp out such cults so effectually and completely as when scientific progress lessens the human necessity for their existence.

Diseases of the Digestive Canal. By Dr. Paul Cohnheim. Translated by Dudley Fulton, M. D. Philadelphia and London: J. B. Lippincott Co. 1909.

This book has been written with a special consideration of the needs of the general practitioner. Physiological, pathological and anatomical subject-matters have, therefore, been omitted, as also frequent reference to the literature. Much attention is given to the subject of complete and accurate history taking, the author believing quite correctly, that in lieu of special laboratory equipment and a knowledge of laboratory methods, a thorough and rational anamnesis is the most valuable guide to a correct diagnosis. Another valuable and much neglected subject upon which the author lays special stress is the difference between organic and functional or nervous disturbances. A lack of appreciation of this distinction, and especially the inability of the general practitioner to recognize gastro-intestinal disturbances of a purely functional nature is the secret of success of so many "quacks" in treating such disturbances.

Each chapter is followed by several case-reports, illustrative of the subject under discussion, as well as by several prescriptions applicable to the case in point.

The simpler methods of examination of stomach-contents and feces are described. The necessity of giving each patient a written or printed diet list with accurate directions is emphasized, and the appendix of the book contains a few typical diet lists for conditions most frequently met with. The important subject of abdominal binders and supports might with advantage have been treated at somewhat greater length.

The translation is accurate and fluent; a few paragraphs by the translator interspersed through the volume have added to the general value of the work.

Applied Anatomy. The Construction of the Human Body Considered in Relation to its Functions, Diseases, and Injuries. By Gwilym G. Davis. Associate Professor of Applied Anatomy, University of Pennsylvania; M. D., Universities of Pennsylvania and Goettingen; Member of the Royal College of Surgeons, of England; Surgeon to the Episcopal, St. Joseph's, and Orthopedic Hospitals; Orthopedic Surgeon to the Philadelphia General Hospital; Fellow of the American Surgical Association; Member of the Society of Clinical Surgery; Member of the American Orthopedic Association; Fellow of the Philadelphia Academy of Surgery. The Philadelphia College of Physicians, and the American Academy of Medicine, etc. With Six Hundred and Thirty Illustrations, Mostly from Original Dissections and Many in Color. By Erwin F. Faber. Philadelphia and London: J. B. Lippincott Company.

To the reader, who is supposed to be informed with the bare facts of systematic anatomy, especially if he is seeking further enlightenment on the relationship which exists between structure and function and the impairment of this relationship which is caused by disease or injury, this volume of Dr. Davis will prove itself to be of absorbing interest. The author says in his preface that it is not the object of the book to teach plain anatomy, but that the work

is intended to be explanatory and utilitarian in character. It is meant to point out the application of general anatomical knowledge to the conditions met in everyday practice, and it does this in such a way as to remove the old idea that the study of anatomy is uninteresting and dry. The author of this review has passed many pleasant hours in reading the book, and his attitude toward the book has become one of deep admiration. The correlation of facts and the arrangement of the text are such that it puts into one's hands the most valuable treatise from a surgical standpoint, and it may be said that the work is particularly surgical in its attitude. Take, for instance, the excellent chapter on the shoulder-girdle; here the skeleton and the muscles are as well described, then the surface anatomy is considered. Following this comes a clear description of the various affections of the shoulder-girdle put in such a way that the reader gains a most complete knowledge of the various forms of shoulder dislocations, clavicular, scapular, and humeral fractures, affections of the bursæ, tendons, and nerves; and withal a particularly clear description of the objects and ends of surgical treatment. Other parts are handled in the same way. The illustrations are of the highest character. On the whole it may be said to be a most excellent work in all its characteristics.

FRACTURES AND THEIR TREATMENT. By J. Hogarth Pringle, M. B. (Ed.), F. R. C. S. (Eng.). New York: Oxford University Press. 1910. Price, $5.50.

This volume, which is well printed and illustrated by many original drawings, photographs, and *x*-rays, represents an attempt, on the author's part, to produce a book in English, which would be abreast of the times in the treatment of fractures. The *x*-ray and the result of insurance of workingmen against injuries have brought about much increase of interest in the subject of fractures. Pringle presents, within as short a compass as possible, an account of the mechanisms by which the various fractures are produced and of certain methods of treating these injuries. The work is not encyclopedic, but describes only his own experience; and on this account it has considerable value, since, similar to most English textbooks, it is concisely written. The portion of the book which is new and of striking interest is the chapter which deals with fractures and their results in connection with workingmen's compensation. The question of how far the workingman's earning capacity may have been affected by an accident, he believes to be a problem for a medical man to settle. He attempts to unify the opinions held by the medical profession regarding the injuries themselves and their ultimate effect upon those who have been injured, considering the persons injured as working machines. To this end he has drawn information from France and Germany, where well-established rules for compensation after injury are in effect. He has appended a table which shows in percentages the value to the workingman from the standpoint of compensation of practically all fracture-injuries. This attempt is a most interesting and valuable one, and the book in consequence will have a distinct use in England and, perhaps, in this country in estimating the amount of damage entailed by fracture and allied injuries.

THE SURGERY OF CHILDHOOD. Including Orthopedic Surgery. By De Forest Willard, A. M., M. D. (Univ. of Pa.), Ph.D., Professor of Orthopedic Surgery, University of Pennsylvania; Surgeon to the Presbyterian Hospital; Surgeon-in-Chief, Widener Industrial School for Crippled Children; Ex-President American Surgical Association, American Orthopedic Association, Philadelphia Academy of Surgery, Philadelphia County Medical Society; Ex-Chairman Surgical Section American Medical Association; Fellow Philadelphia College of Physicians, etc. With 712 Illustrations—including 17 in Colors. Philadelphia: J. B. Lippincott Company. Price, $7.00.

The principal object of this book seems to be the encouragement of earlier examination and recognition of the diseases of childhood. It was, of course, difficult to condense into a single volume all that this implies, but the author has given us what he has found to prove worthy in his own daily experience. The subjects are classified by arranging them in groups of allied conditions and by using the regions of the body as a guide. All extended histories and statistical information have been avoided, for it was apparently Dr. Willard's belief that unless statistics are compiled from the reports of many observers they are unreliable. He has laid special stress upon the importance of the

practical clinical examination of each patient. The chapter on the *x*-ray is a very valuable one. He clearly shows that in addition to all the research and investigation that a surgeon of the present day is called upon to make, there is also required of him considerable accurate cerebration in order clearly to interpret the meaning of the mass of aids which he now has at his disposal.

DISEASE OF THE PANCREAS—ITS CAUSE AND NATURE. By Eugene L. Opie, M. D., Professor of Pathology, Washington University, St. Louis, Mo.; Formerly Member of the Rockefeller Institute for Medical Research, and Pathologist to the Presbyterian Hospital, New York City. Second Edition Rewritten. Illustrated. Philadelphia: J. P. Lippincott Company. 1910.

It is now seven years since the first edition of Opie's book appeared, representing at the time a pioneer work on this subject. Consequently the recent and abundant investigations on the pancreas during this interim have made a very careful rewriting of this edition necessary. The literature has been most carefully reviewed and this with the data collected has served to clear up many obscure points in the previous edition. The chapters on hemorrhagic necrosis of the pancreas, chronic pancreatitis, and the pancreatic pathology of diabetes mellitus have received a most thorough consideration. The pathology of the pancreas has been much simplified, while the symptomatology still remains very obscure. The illustrations are in great part original and the literature references have been brought up to date.

The book represents a most careful and thorough work on the part of the writer, both from the standpoint of originality and that of classification of the observations of others. This makes it possible for anyone interested to have a complete and classified knowledge of the diseases of the pancreas.

NEPHROCOLOPTOSIS. By H. W. Longyear, M. D., Professor of Gynecology and Abdominal Surgery, Detroit Post-Graduate Medical School; Clinical Professor of Gynecology, Detroit College of Medicine, etc. With 88 Special Illustrations and a Colored Frontispiece. St. Louis: C. V. Mosby Company. 1910. Price, $3.00.

The author contends that the displaced colon is etiologically very important in all cases of ptosis of the kidney and viscera. He has described a broad band that connects the kidney to the colon, which is found extending behind the colon and inside Gerota's capsule. This nephrocolic ligament is considered of sufficient tensible strength when bunched together to support the kidney and colon. In operating to fix these structures the lumbar incision is used, but the kidney is not stripped of the fatty capsule. Instead, the fingers are passed in the first instance beyond the lower pole of the kidney, and are looped about this fasciculus, which is called the nephrocolic ligament. The kidney is replaced in the normal position by pressure from the front, and the ligament is brought up through the loin and sutured just beneath the muscles, a silver wire suture acting as a guy. Attention is paid to the proper feeding and regulation of the bowel. The most reliance is placed in liquid petrolatum as a lubricant, and enemata are employed to induce peristalsis. He reports the histories of 56 operated cases with a large proportion of anatomic cures and many cases entirely relieved of symptoms.

URGENT SURGERY. By Felix Lejars. Translated from the Sixth French Edition by William S. Dickie, F. R. C. S. With 20 Full-Page Plates and 994 Illustrations of which 602 are drawn by Dr. E. Daleine and A. Leuba, and 217 are from Original Photographs. Vol. II. The Genito-Urinary Organs—The Rectum and Anus—The Strangulated Hernias—The Extremities. New York: William Wood & Company. 1910. Price, $7.00.

This work covers the field that is the province of the surgeon in an active hospital service where cases have to be dealt with without delay. The method of presenting the subject concerns the treatment more than the etiology, except when that is determinative of the surgical procedure. The work is most interesting, both in its method of handling the subject and in the wealth of material which is used illustrative of the various subjects. If one were to follow the chief of a large surgical clinic in the wards and operating-room one would rarely have such an opportunity to learn as by reading this excellent work. The style is excellent and to the point, and the really clever observations hold one's interest and direct the attention along the proper lines.

OPHTHALMIC SURGERY. A Treatise on Surgical Operations Pertaining to the Eye and Its Appendages, with Chapters on Para-Operative Technique and Management of Instruments. By Charles H. Beard, M. D., Surgeon to the Illinois Charitable Eye and Ear Infirmary; Oculist to the Passavant Memorial Hospital, Chicago; Ex-President of the Chicago Ophthalmological Society; Member of the American Ophthalmological Society, Etc. With 9 Plates, Showing 100 Instruments and 300 Other Illustrations. Philadelphia: P. Blakiston's Son & Co. 1910. Price, $5.00.

Taking into consideration the great number of textbooks and treatises on diseases of the eye that have overweighted our book-shelves in the past decade, one naturally wonders why no one has attempted to supply the need of a treatise on ophthalmic operations. This is the more surprising when we consider that no separate work on the surgery of the eye has appeared in the United States in the last half century.

The time is ripe, then, for someone to "break the ice" and that someone has happened to be Dr. Charles H. Beard, Surgeon to the Illinois Charitable Eye and Ear Infirmary. Fortified by an excellent preliminary training under such noted exponents of ophthalmic surgery as Agnew and Knapp, Dr. Beard entered upon his long service at the Illinois Institution, imbued with high ideals and equipped with a well-developed technique. In writing the book Dr. Beard has aimed to "supply a work that would embody not only what experience has taught and judgment prompted as being the more valued measures of all countries, but in particular, those of our own country." Each chapter is preceded by a brief historical note showing how present-day procedures were gradually evolved out of the experience of the past. As is natural (and desirable) those procedures which have been tried and found "not wanting" by the author are discussed in greatest detail, although others come in for due consideration. We note with some surprise that the excellent operation of Ewing (modified Green) for entropion, is conspicuous by its absence. It is extraordinary that this measure, so much simpler than some of the radical procedures described, and equally, if not more efficient, should find no place in a work of this nature.

The writer's style is really delightful, vivid, easy and often abounding in humor. One feels that Dr. Beard writes *con amore*.

The illustrations are copious and are largely the work of Beard himself; but in dispraise, where so much praise has been bestowed, it is necessary to state that the book is marred by many evidences of hasty proof-reading.

AN INTERNATIONAL SYSTEM OF OPHTHALMIC PRACTICE. Edited by Walter M. Pyle, A. M., M. D. Therapeutics. By Dr. A. Darier, Paris. Translated by Sydney Stephenson, M. B., F. R. C. S., London. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1910. Price, $4.00.

This volume is the first of a series of seven, designed to provide a compact resumé of modern ophthalmic practice.

The first part deals, in fourteen chapters, with General Therapeutics. Special Therapeutics, constituting the second part, is considered in ten chapters.

Chapter I. "Methods of Diagnosis," considers, in addition to usual clinical methods, certain laboratory methods, such as sero-diagnosis, the various tuberculin reactions, experimental diagnosis, etc. The chapters following deal with constitutional treatment, extra-oral medication, leading up to a discussion of special local and general therapeutic methods.

Each chapter of the second part deals with special diseases of the eye or adnexa and the application of local and general therapeutic measures.

We have only to recall the international reputation in ophthalmic therapeutics of the distinguished author, to anticipate an exhaustive and original treatment of the subject, and in this we are not disappointed. Dr. Stephenson has done the French into facile English, and Dr. Pyle has exercised careful editorial oversight, not hesitating to rearrange and adapt in the interest of clearness and system.

If this volume be a sample of those to come, it is certain that the complete set will form a valuable addition to the literature of ophthalmology.

ATLAS OF EXTERNAL DISEASES OF THE EYE FOR PHYSICIANS AND STUDENTS. By Dr. Richard Greeff, Professor of Ophthalmology in the University of

Berlin and Chief of the Royal Ophthalmic Clinic in the Charité Hospital. Only Authorized English Translation, by P. W. Shedd, M. D., New York. With 84 Illustrations in Color from Wax Models Printed on 54 Plates with Explanatory Text. The Illustrations are from Models in the Pathoplastic Institute in Berlin. Art Director: F. Kolbow. New York: Rebman Company.

The American edition of Prof. Greeff's atlas of external diseases of the eye is a fine example of intelligent coöperation of author, translator, artist and wax modeler in the production of a series of wonderfully beautiful colored plates. Generally speaking, the pictures are remarkably true to life, both as to drawing and coloration. We must except, however, Fig. 48, Plate XXXIII., which is supposed to represent a case of interstitial keratitis. Here, while the drawing is reasonably good, the coloring is far from representing a typical example of this malady.

Refraction and Motility of the Eye. By Ellice M. Alger, M. D., Adjunct Professor of Diseases of the Eye in the New York Post-Graduate Medical School and Hospital; Ophthalmologist to the New York Dispensary, etc. Thoroughly Illustrated with 122 half-tone and other engravings. Handy 12mo. size. 376 pages. Philadelphia: F. A. Davis Company. Price, $1.50.

We have nothing but words of praise for Dr. Alger's splendid little work. He has produced a book which is clear, sufficiently full without being overladen, and eminently practical. He has steered a most fortuitous course between the Scylla of the "invariable cycloplegist" and the Charybdis of the "never cycloplegist"; and calmly, with much judicial poise, presents the claims of either camp.

The specialist, as well as the general practitioner, for whom the work is principally intended, will acquire a clearer conception of some of the problems of this difficult art from a careful perusal of the work.

Lessons on the Eye: For the Use of Undergraduate Students. By Frank L. Henderson, M. D., Ophthalmic Surgeon to St. Mary's Infirmary, etc. Fourth Edition, Revised. Philadelphia: P. Blakiston's Son & Co. 1910.

These "Lessons" are designed to obviate in part the necessity for didactic lectures in ophthalmology to undergraduate students; the time thus saved being more profitably devoted, in Dr. Henderson's opinion, to quizzing.

In this (fourth) edition the original plan to discuss briefly anatomy, physiology and diseases, while touching very lightly upon optics and errors of refraction, has been adhered to. If we agree with the writer that simple refraction and the use of the ophthalmoscope are less important than the subjects discussed, it must be confessed that the little book is a highly useful one and doubtless has fulfilled a useful function. To-day, however, the tendency is to instruct the undergraduate in the elements of refraction and the use of the ophthalmoscope, in order that he may, if he so desire, add the practice of simple refraction to his abilities in the line of general practice. A number of State Boards of Health now require a knowledge of simple refraction in all candidates for license to practise, and it is fair to assume that this requirement will become general.

Die interlobaere exudative Pleuritis (unter Zugrundelegung von 100 Krankheitsfaellen). Von Prof. Dr. G. L. Sacconaghi. Wuerzburger Abhandlungen aus dem Gesamtgebiet der praktischen Medizin. X. Band, 7 Heft. Wuerzburg: Curt Kabitzsch (A. Stuber's Verlag). 1910. Price, M. 0.85.

Of all pulmonary affections, the interlobar pleuritic effusions are probably most frequently overlooked. Its diagnosis, while easy with the assistance of the x-rays, is by no means a simple matter by means of the ordinary methods of physical diagnosis. An interesting point is the frequency with which an interlobar empyema undergoes spontaneous evacuation and cure by means of perforation into a bronchus. This is so common an occurrence that the author advises waiting a reasonable time for it to supervene before proceeding to operative evacuation. An interesting summary of cases from personal observation and the literature closes the monograph.

PRACTICAL BACTERIOLOGY, BLOOD WORK AND ANIMAL PARASITOLOGY—Including Bacteriological Keys, Zoological Tables and Explanatory Clinical Notes. By E. R. Stitt, A. B., Ph.G., M. D. Surgeon U. S. Navy; Associate Professor of Medical Zoology; Philippine Medical School. Second Edition, Revised and Enlarged with 91 Illustrations. Philadelphia: P. Blakiston's Son & Co. 1910. Price, $1.50.

Within the compass of less than 350 pages and rather large print, the author has included not only the entire field of clinical pathology, but a zoological treatise on human animal parasites. This involves an enormous amount of compression and exaggerated brevity. For an army surgeon on field duty, who is unable to carry with him any more than a single textbook that can be slipped into the pocket, such a volume may be indispensable. For one who has access to larger and more complete manuals, its value must remain problematical.

STATE BOARD EXAMINATION QUESTIONS AND ANSWERS—Of Forty-one States and Two Canadian Provinces. A Practical Work, Giving Authentic Questions and Authoritative Answers that will Prove Helpful in Passing State Board Examinations. Reprinted from the Medical Record. Third Edition. Revised and Greatly Enlarged. New York: Wm. Wood & Company. 1910. Price, $3.00.

The scope of this book is explained by the title. The various examination questions propounded by the various State Boards are arranged by States and under these by subjects. It has no value except as an aid to cramming for a State Board examination, but for this purpose may well prove indispensable.

OSTEOLOGY AND SYNDESMOLOGY. By Howard A. Sutton, A. B., M. D. Assistant in the Department of Anatomy of the University of Pennsylvania; Lecturer in Anatomy, Pennsylvania Orthopedic Institute; Assistant Surgeon, Methodist Episcopal Hospital, etc., and Cecil K. Drinker, B. S. Philadelphia: P. Blakiston's Son & Co. 1910. Price, $1.50.

This little volume has no reason for existence. The only excuse the authors have to offer for publishing it is that they hope to remove the need of tedious labor in studying the bones and joints. There are no illustrations and its only possible value would be that of a quiz-compend.

FEVER-NURSING—Designed for the Use of Professional and Other Nurses, and Especially as a Textbook for Nurses in Training. By J. C. Wilson, A. M., M. D., Author of "A Treatise on the Continued Fevers" and "A Handbook of Medical Diagnosis." Sixth Edition, Revised and Enlarged. Philadelphia: J. B. Lippincott Company.

This little book embodies the substance of a course of lectures on fever-nursing delivered by the author before the student-nurses at the Philadelphia Hospital. In simple and untechnical terms, the reader is taught not only how fever patients are to be cared for, but why. It is not only suitable for nurses but may profitably be put in the hands of anyone who has occasion to care for a member of her family, ill of a febrile affection.

DIE AKUTE CHIRURGISCHE INFECTIONSKRANKHEITEN. Von Dr. Wilhelm Hagen. Wuerzburger Abhandlungen aus dem Gesamtgebiet der praktischen Medizin. Wuerzburg: Curt Kabitzsch (A. Stuber's Verlag). 1910. Price, M. 0.85.

A brief but systematic review of the acute infectious diseases in so far as they have a surgical interest. The writer takes up in order the various tissues and organs of the body and discusses, from a surgical standpoint, the various inflammatory affections to which they are subject.

THE PHYSICIAN'S VISITING LIST (Lindsay and Blakiston's) for 1911. Sixtieth Year of Its Publication. Philadelphia: P. Blakiston's Son & Co. Price, $1.25.

A convenient visiting list for those physicians who like to carry their day-book about with them. Tables of incompatibilities, doses, weights and measures and the like, as well as condensed information concerning poisonings and other emergencies, add to its value.